

A WEEKLY JOURNAL OF HIGHER EDUCATION

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Rs. 7.00

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Agricultural Education in India

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Pranab Kumar Konar

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Association of Indian Universities



UNIVERSITY OF DELHI SOUTH CAMPUS

Advt. No. UDSC/Estab.13/95

Applications on the prescribed form are invited for the following posts so as to reach the **DEPUTY REGISTRAR, UNIVERSITY OF DELHI SOUTH CAMPUS, BENITO JUAREZ ROAD, NEW DELHI-110 021** latest by 4th September, 1995.

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No. Specialization desired**

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For **Reader** : Experience in immunology/virology and membrane biology.
2. **Biochemistry Professor (1) Reader(1)**
For **Professor** : Experience in protein engineering or Molecular Immunology
For **Reader** : Experience in immunology/virology and membrane biology.
3. **Biophysics Lecturer (1)**
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5. **Commerce Professor (1) Readers (2)**
For **Readers** :
 1. Organizational Behaviour/Human Resources and Basic knowledge of Computer Application.
 2. Accounting/Finance/Taxation/ Quantitative Techniques and basic Knowledge of Computer Application.
6. **Electronic Science Readers (2)**
Digital Electronics and Signal Processing/Microwave Electronics and Optical Communication/Microprocessors and Microcomputers/Electrical Machines and Control Systems/Semiconductor Materials and Devices/Microwave CAD
7. **English Reader (1)**
8. **Financial Studies Readers (2)**
Master's Degree in Management, Economics, Commerce and related subjects with experience with industry or professional experience.
Specialisation:
International Finance/Security Analysis and Portfolio Management/Financial Services/Managerial Economics.
9. **Hindi Professor (1) Readers (2)**
Professor (1) in Hindi Journalism
Reader (1) in Hindi Journalism.
For **Professor & Reader** - Good academic record with at least a second class Master's degree in Journalism or equivalent Diploma from recognized University/Institution of Journalism with strong background of Hindi or M.A Hindi/any other literature or Social Science subject with strong background

of Hindi and practical experience as Journalist.

For **Professor** - at least Ten (10) years professional and/or teaching experience of University level with a record of outstanding professional experience in Journalism.

OR

An outstanding Journalist with established reputation who has made significant contribution in the field of Hindi Journalism.

For **Reader** - At least Five (5) years professional and/or teaching experience of University level with a record of outstanding professional experience in Journalism.

Desirable For **Professor and Reader** - Research work of professional eminence in the field of Hindi Journalism.

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10. Management Studies Professors (2) Lecturers (2)

For **Professors** - Management Accounting & Financial Management, Marketing Management, Industrial Relations Operations Management, Business Policy, & Strategic Management, Management of Public Utilities & Services such as Educational Administration, Telecommunication, Health Care Administration, Energy, Transportation System and other Urban and Rural Services

For **Lecturers** - Computer & M.I.S., Production & Materials Management, Human Resource Management, Economic Environment and Global Business, Corporate Planning and Entrepreneurial development

11. Microbiology Professor (1)

Microbial Physiology/Microbial Biochemistry/Industrial & Applied Microbiology/Microbial Genetics & Molecular Biology/Environmental Microbiology.

12. Philosophy Readers (2)

For one **Reader** : Classical Indian Philosophy with Ph.D. in Classical Indian or equivalent published work with good knowledge of Sanskrit.

13. Plant Molecular Biology Professor (1) Readers (2) Lecturers (2)

For **Professor, Readers & Lecturers**: Regulation of Gene expression/ Photobiology/Developmental Biology/ Stress Molecular Biology/ Biotechnology

14. Political Science Professor (1) Reader (1)

For **Professor** : International Politics
For **Reader** : Comparative Government/Political Theory

Dated : 5th August, 1995

15. Slavonic & Finno Ugric Studies Reader (1) Lecturer (Part-time) (1) Russian Literature

Ref. Advt. No. 11 & Advt. No 12.

Applications are also invited for the following posts which had earlier been advertised vide Advt. No.11 (4.3.94) & Advt. No.12 (11.8.94). Persons who have applied earlier need not apply again but they will be considered only as per revised essential qualifications which can be obtained from the address given below.

PROFESSORS : Biochemistry (1), Commerce (1), Hindi Journalism (1), Management (2), Microbiology (1), Political Science (1).

READERS : Biochemistry (1), Business Economics (3), Electronic Science (1), English (1), Hindi Journalism (1), Hindi (1), Plant Molecular Biology (2).

NOTE :

1. For Lecturer in each subject one out of 5 posts (at least one) is meant for candidates belonging to SC/ST, if no suitable candidate is available the post will be filled-up by appointing any other suitable candidate

2. 3% posts of Lecturer are reserved for physically handicapped candidates

3. For Professor & Reader, other things being equal preference will be given to SC/ST candidates

4. It will be open to the University to consider names of suitable candidates who may not have applied

5. Number of posts is given within parenthesis against each post

6. University reserves the right not to fill up any of these posts advertised.

7. Relaxation of any of the qualifications may be made in exceptional cases on the recommendation of the Selection Committee

8. Canvassing in any form by or on behalf of the candidate will disqualify him / her.

9. Candidates from outside Delhi when called for interview will be paid to and fro single second class rail fare.

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Details regarding prescribed qualifications and application form of various posts can be had from Establishment Branch, Administration Block, University of Delhi South Campus, Benito Juarez Road, New Delhi - 21 during working hours either personally or by sending a self-addressed & postage stamped envelope worth Rs. 8/- at the above address.

B. K. YADAV
DEPUTY REGISTRAR

IN THIS ISSUE

**Agricultural Education
in India**

1

**Marketing of
Library & Information
Products & Services**

8

**Curriculum for
Teacher Education**

10

**All India Council of
Physical Education**

11

Convocation

16

**Indian Institute of
Technology, Bombay**

Campus News

**Andhra Varsity Centre
for Marine Studies**

24

**Artificial Intelligence
Centre**

26

Agriculture

**Refresher Course
in Agronomy**

28

News from UGC

**Countrywide Classroom
Programme**

29

News from Abroad

**Conference on
Feminist Methodology**

30

Book Review

31

Theses of the Month

33

Education News Index

34

Classified Advertisements

38

**Opinions expressed in the articles
are those of the contributors and
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cies of the Association.**

**Editor :
SUTINDER SINGH**

Agricultural Education in India

S. Arya*

India is a union of states in a sovereign socialist democratic republic with parliamentary system of government which is federal in structure with 26 states, and 6 union territories. Today, India occupies a place of pride among developing countries in the field of agricultural development. It is one of the colonial states which, after independence, managed to provide food security to its teeming millions in a short span of time and under adverse conditions on many fronts. From a state of hunger, poverty and vast population India has developed an exemplary system of agricultural research, education, extension and development.

Agriculture in Indian Economy

Agriculture forms the backbone of Indian economy and despite concentrated industrialisation, agriculture is the source of livelihood for over 70% of the population. Agriculture and allied occupations viz. animal husbandry, forestry, etc contributed 59% to the national income in 1950-51 which dropped to about 31.6% of the national income in 1990-91. The share of agriculture in national income has been decreasing steadily and the proportion of work force dependent on agriculture has declined marginally. Though the non-agricultural sectors have been generating more income, yet they are not proportionately generating employment opportunities, so the residual work force is compelled to depend on agriculture, whether it is viable or not. The implication of this is that the relative income per worker in agriculture vis-vis a worker in non-agricultural sector is lower and has been continuously declining.

One of the grave problems affecting Indian agriculture today is the continuing pressure of manpower on the limited land resources, due to inadequate generation of employment opportunities outside agriculture. Agricultural development has a vast potential of reducing poverty by providing gainful employment and thereby food security to millions. An increase in agricultural production has been recognised as an important factor in contributing to reduction in poverty. It has been found that a 1% increase in per capita cereal output reduces rural poverty by 0.62 per cent while 1% rise in the relative price of cereals lagged by one year increases rural poverty by as much as 1.06 per cent (Bhattachar et al, 1990-91.)

In view of the falling rates of capital formation in agriculture during the eighties, there is now an apprehension whether even the modest growth performance in agriculture would be maintained in future. The percentage share of agriculture in gross domestic capital formation declined in both public as well as in private sector. The rate of decline was more prominent in the public investments as compared to private investments. This decreasing rate of capital formation and investment in agriculture is a matter of great concern to the policy makers as it may adversely affect the highly desired sustainable growth rate in agricultural production to meet the requirements of ever growing population.

The commercialisation of Indian agriculture under liberalised eco-

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nomic policy will encourage export of agricultural, horticultural and livestock products. Indian farm produce have a price advantage in the international trade, and India should cash on this. The country should build on its strength and develop plans for conquering both endemic hunger within and markets for farm produce abroad.

The situation calls for focussing attention on agricultural development. Agricultural development requires efforts on various aspects but our past experiences indicate that agricultural education is the basic foundation on which different programmes could be developed.

Agricultural Education in Historical Perspective

Agricultural education was prevalent in the country even during the medieval time. The ancient Nalanda and Takshila Universities are said to have the facilities for agricultural education. However, organized instructions in agriculture were started in India only in the beginning of the twentieth century when 6 agricultural colleges were established in undivided India at Kanpur (1906), Lyallpur (1906), Coimbatore (1906), Nagpur (1906), Poona (1907) and Sebhour (1908). Almost at the same time 3 veterinary colleges were also established at Bombay (1886), Calcutta (1893) and Madras (1903). The Government of India established the Imperial Council of Agricultural Research in 1929 as an autonomous organization under the Ministry of Agriculture, to aid, promote and coordinate agricultural research and education in the country. When India attained independence in 1947 there were about 15 institutions in the country providing agricultural and veterinary education with a total intake capacity of 1,500 students. These institutions were mostly established by the state governments and were managed by the respective departments of the agriculture/animal husbandry of the concerned states. These colleges were purely teaching institutions affiliated to traditional universities and contributed little to research. Until 1947, a variety of institutions were concerned with research and education but there was a complete lack of coordination or interaction between them.

Period of Introspection and Review 1947-1963

On attaining independence in 1947, it became clear that our agricultural under-development was largely the consequence of institutional under-development. It was realized that the lack of both trained scientists and effective institutions was resulting in

under-utilization of natural resources and in many cases wastage of investment capital. By 1950, it was clear that increased food production was imperative for India's survival and application of science and technology in agriculture was an inescapable necessity.

Another important experience was that agricultural research was to be anchored solidly in the development needs of agriculture. Problem oriented research programmes had, therefore, to be developed and priorities of research were to be related to priorities of development. It was with this background that Government of India set up in fairly quick succession, at least three Expert Committees/Commissions to review the then existing agricultural research and education systems. The earliest was the University Education Commission (1948-1950), popularly known as the Radhakrishnan Commission. This commission recognised the inadequacy of agricultural education under the then existing pattern of agricultural colleges affiliated to traditional universities, and strongly recommended the establishment of 'rural universities'. This was followed by the first Joint Indo American Team (1955) on agricultural education and research and the second Joint Indo-American Team (1959) on research, education and extension. These two teams strongly recommended a major reorganization of the research and education systems in India both at the national and the state levels. These teams recommended the establishment of agricultural universities. Integration of research, teaching and extension was to be one of the cardinal features of these universities. The triple objectives were to make education more relevant to the needs of development, to strengthen research in the states and to provide research base to agricultural extension.

For developing viable and effective research and education systems, India had in fact drawn heavily on the experiences, materials and methods of a number of agriculturally advanced nations. The emphasis always was, however, not on direct transplantation of any alien system, but on innovations, evaluation and adaptation to local environment — physical and social, and even more so on identification of principles and procedures conducive to agricultural development in India.

Period of Expansion and Consolidation — 1963 Onwards

The Imperial Council of Agricultural Research was reorganised in 1965; renamed as Indian Council of Agricultural Research (ICAR) and further

reorganised in 1975. The Council is a nodal agency for monitoring and coordinating higher agricultural education in the country. It receives 100% grant from the Government of India which is utilized for agricultural research and education through a network of 43 central institutes, 8 project directorates, 12 national centres, 4 national bureaux, 86 coordinated projects and 27 state agricultural universities (SAUs).

The first agricultural university came into existence in 1960 at Pantnagar and today 27 agricultural universities have come into existence covering most states of the country (Annexure I). The 27 agricultural universities in the country offer undergraduate programmes in 11 fields with total admission capacity of about 10,000 students. These institutions also provide postgraduate educational programmes in more than 50 disciplines. The names of disciplines, number of colleges, and their annual admission capacity are given in Table I.

Table I — Number of colleges, disciplines and admission capacity under various programmes in SAUs.

S.No	Discipline	No. of Colleges	Admission capacity
			Undergraduate Postgraduate
1.	Agriculture	49	5,450 2,500
2.	Veterinary Science and Animal Husbandry	28	1,800 450
3.	Agricultural Engineering	16	560 200
4.	Home Science	17	670 115
5.	Fisheries Science	6	150 55
6.	Dairy Technology	6	160 200
7.	Agricultural Marketing/ Banking and Co-operation	2	100 -
8.	Forestry	12	285 12
9.	Horticulture	8	240 -
10.	Sericulture	1	30 -
11.	Food Science and Technology	1	50 -

146

Source : ICAR (1988) Opportunities for higher agricultural education in India.

These universities follow trimester/semester and course-credit system of education with internal evaluation. Even though they are state level institutions, established under an Act passed by the State Legislatures and derive their funds mainly from the respective state governments, they enjoy a great deal of autonomy and are governed by autonomous Boards of Management on which the state governments are strongly represented. The Governor of the State func-

tions as the Chancellor but the Vice-Chancellor functions as the Chairman of the Board of Management. These universities also draw substantial grants from the central government through the ICAR for institutional development, research and extension education programmes.

The SAUs admit students to the bachelors level degree programmes after the 12th grade in science. The duration of the various bachelors degree programmes is generally 4 years. The Master's degree is normally of 2 years and the Ph.D. degree of 3 years duration.

The distinctive features of agricultural universities are :

1. Integration of teaching, research and extension education;
2. Statewide responsibility for research;
3. Internal evaluation and flexible course credit system;
4. Unified administration of constituent colleges and a Board of Management headed by the Vice-Chancellor;
5. Agriculture-oriented/relevant course curriculae;
6. Organizational and operational autonomy;
7. Philosophy of service to agriculture and rural community;
8. Quick communication of new knowledge with media support; and
9. Training of farmers and efficient transfer of technology.

Agricultural Education & ICAR Institutes

Two of the ICAR institutes, namely Indian Agricultural Research Institute, New Delhi, and Indian Veterinary Research Institute, Izatnagar, have been conferred with the status of 'Deemed-to-be University' and are offering postgraduate education in various disciplines of agriculture and animal sciences. The National Dairy Research Institute, Karnal, offers undergraduate and postgraduate education in Dairy Science. Similarly, most of the other ICAR institutes also provide facilities for imparting training in the area of their specialization. Education/training programmes offered in the ICAR institutes are given elsewhere in this paper.

Agricultural Education in Traditional Universities

Over and above the agricultural universities and ICAR institutes, 3 central universities in the country,

namely, Banaras Hindu University, Varanasi, Viswa Bharati, Shantiniketan, and North-Eastern Hill University, Shillong, have faculties of agriculture with facilities of education in undergraduate and postgraduate programmes in agriculture. In addition to this, there are about 30 agricultural colleges affiliated to general universities functioning in the private sector.

Agricultural Education at School Level

The agricultural orientation at school level is needed to create awareness of the problems of the farmers, to appreciate skills needed in farming and possibilities opened by science and technology including those of self employment.

Agriculture is taught in many junior and senior basic schools, general secondary schools and multi-purpose schools at the primary and secondary levels. At the primary level, agriculture has been introduced as one of the compulsory crafts in the junior and senior basic schools, especially in rural areas. In a few general high/higher secondary schools in some states courses in agriculture are offered either to fulfil the requirements of introducing a rural craft or as one of the elective subjects to meet the requirements for matriculation.

Informal Agricultural Education System

The history of institutionalized informal agricultural education and training of farmers in India is not very old. Efforts in this direction were made at the turn of this century by the British administration in India. A department of agriculture was established in 1871 at the centre and by 1882 all important provinces had a department of agriculture to guide and help farmers. Besides the government departments, pioneering work in training of farmers was done during this period by voluntary organisations, individuals and administrators primarily out of humanitarian considerations. Sriniketan project of Rabindra Nath Tagore, Christian Missions in South India, P.L. Bryne's work in Gurgaon, Etawah Pilot Project by Albert Mayor and Firka Development Project etc are some of the many programmes of informal education of farmers that provided the basis for developing India's vast system of farmers' education.

Today, India has gigantic infrastructure for informal education and training of farmers, which has no parallel in the world for its enormous size, elaborate activities and multifarious programmes. Five distinct systems of informal education are in existence viz. Extension system of the Government of India, State De-

velopment Departments, State Agricultural Universities/ICAR, NGOs and Commercial agencies.

Community Development Programme (CDP)

The Government of India launched the Community Development Programme in 1952. Initially this programme was in operation in 55 CD Blocks but its expansion was very rapid. By 1962 the whole of rural India was covered. There were about six thousand blocks, sixty thousand Extension Officers and sixty thousand village level workers (VLWs) in every nook and corner of India. A block was headed by a Block Development Officer, who was assisted by a team of subject matter specialists (SMS) with one VLW for a group of about 10 villages. Pandit Jawahar Lal Nehru, the first Prime Minister, under whose patronage the programme started and grew, on one occasion, observed : "I think nothing has happened in any country in the world during the last few years so big in content and so revolutionary in design as the Community Development Project in India." This observation holds good even today as informal education programmes for hundreds of millions of rural people have not been attempted anywhere in the world. The central emphasis was on a change through Extension Education—a concept of ways to help farmers and rural people learn to improve their farm, home and community by aided self-help through education to ultimately raise their standard of living. During the days of Community Development it was very often mentioned, "Community Development is the objective and the Extension Education the means of attaining it."

The programme gradually created an awakening among the rural masses and the government for the first time appeared to the people as a welfare state. This programme did help to some extent in the development of leadership at the grassroot level. Upto the mid sixties the task of agricultural education and training of farmers was largely shouldered by this programme.

Other Developmental Programmes

As the agricultural production did not grow as fast as the population and a situation emerged where foodgrains had to be imported, the Government of India appointed a Joint Indo-American Team to study the situation and suggest measures to improve the same. This team recommended the starting of Intensive Agriculture District Programme (IADP). The launching of this programme became an important cornerstone in the agricultural development of the country. Prior to this, efforts of agricultural develop-

ment focused on 'technology generation' and 'extension education.' It was realised that it should include other essentials viz. market of the agricultural products on remunerative prices, efficient infrastructure for supply of inputs, roads, irrigation and power. The IADP programme took care of these components and provided Agricultural Extension Officers and VLWs in increased number in selected CD blocks. The IADP system provided a structure which ushered in the green revolution through High Yielding Varieties Programme. The problem of perennial and acute shortage of foodgrains thus came to an end. Between the years 1965-66 and 1977-78 the food production increased three times. By design the programme was carried out in the most favoured areas with progressive farmers who could respond quickly. Though this helped the country to get out of a situation of food crisis, the small and marginal farmers and farmers in rainfed and dry farming areas or otherwise difficult areas got neglected. The result was regional imbalance in agricultural development.

Therefore, other special programmes were conceived and launched to remove this imbalance. These include the Small Farmers Development Agency (SFDA), Marginal Farmers and Agricultural Labourers Development Programme (MFAL), Rural Labour Employment Generation Programme (RLEG), Jawahar Rozgar Yojana (JRY), Development of Women and Children in Rural Areas (DWCRA), Training Youth for Self Employment (TRYSEM), Hill Development Programme (HDP), Drought Prone Area Programme (DPAP), Desert Development Programme (DDP), Fisheries Development Programme (FDP) and other programmes mainly for the weaker sections. The Government of India launched the Integrated Rural Development programme (IRDP) in 1975-76. Under this programme various developmental programmes are implemented through the nodal agency at district level, namely, District Rural Development Agency (DRDA).

Training and Visit System

The state agricultural development and extension development work got momentum with the introduction of the Training & Visit System (T&V System) of agricultural extension developed by the World Bank. The system was introduced in 1975 and is in operation practically in almost all states of the country and this receives financial support from the World Bank. The salient features of this system include the regular updating of technical knowledge of the functionaries by fortnightly or monthly training programmes of the

Village Extension Workers (VEWs) and the Subject Matter Specialists (SMSs) respectively. These functionaries further update the farmers and this has helped to increase extension density. The system also provides and ensures strong research-extension linkage.

New Directions

A new direction has recently been given by the Government of India to rural development by enacting the new Panchayati Raj Act and significant increase in the financial outlays for rural development. The new Panchayati Raj ensures greater level of peoples' participation with special emphasis on the involvement of women and weaker sections.

ICAR & SAUs

The ICAR and the SAUs focus primarily on agricultural research and education. The extension responsibility is primarily with the state development departments. However, the ICAR and SAUs have also developed extension programmes with the dual objective of providing model extension system and a first hand exposure to the scientists to field problems. The ICAR has launched the programmes of national demonstrations, lab to land programme, Krishi Vigyan Kendras and other frontline programmes.

The SAUs have also developed extension networks on varying degrees. The SAUs in Punjab and Haryana have an elaborate extension network spread throughout the two states with their offices at each district headquarters. These offices are manned by a team of subject matter specialists. They have also developed institutionalized facilities for farmers training and media support.

NGOs/Commercial/Industrial Agencies

With the advent of green revolution in India there was a large scale growth of commercial activities dealing with agricultural inputs. The private seed, pesticide, fertilizer and allied industries have a network of field workers and sales promoters. These industries, although for commercial gain, also assist in promoting the use of new technologies in agriculture.

The NGOs are also coming in a big way to support agricultural development and informal education of farmers. However, the role being performed by NGOs varies in shades and density.

Issues & Problems in Agricultural Education

The importance of agricultural and allied manpower is vital for agricultural and rural development.

The agricultural education system has to fulfil the changing demands of manpower in agriculture. Agriculture is a state subject and the primary responsibility for agricultural research, education, extension (informal) education is with the states. All major states have established agricultural universities, however, Indian Council of Agricultural Research (ICAR) is the apex organisation coordinating and monitoring agricultural research and education in India.

The issues and problems that need attention are as follows :

Changing Demands

The changing development scenario in rural areas has resulted in changing educational demands for emerging areas. There is need for diversification in the educational programmes with the objective to check up the wastage in educational programmes and divert them towards 'shortage' areas. There is also a need to develop better linkages with industry and other agencies using agricultural manpower.

Mismatch Between Demand and Supply

Job opportunities in public sector are continually shrinking but investments in institutions and their intake of students are on the increase. On the other hand job market in the private sector is slowly and steadily increasing; quality of graduates, especially in analytical and practical skills, is inadequate to meet present and emerging job market needs. The graduates also do not possess adequate skills and confidence to start their own business. Consequently unemployment of graduates is steadily on the increase. This mismatch has to be removed with appropriate adjustments.

Low Motivation

Low motivation and inbreeding of students affect quality of output. Motivation of staff is low and staff performance is declining due to inbreeding, inadequate exposure to latest developments in technology, limited skills in pedagogic methods and management. Corrective measures to check inbreeding and better human resource development are essential.

Inadequate Infrastructure

Agricultural education thrives on state support, as the system provides for heavily subsidised education to the students. The Chaudhary Charan Singh Haryana Agricultural University (CCS HAU) spends about Rs. 36,000/- per annum on each student in the

university. This situation in most universities creates problems of fiscal deficits and inadequacy of funds. The administrative and management systems affect quality and need modernisation. The educational management system has to be made responsive to economic environment.

Women in Agriculture

Women contribute significantly and perhaps more than men in agriculture. However, their share in the agricultural institutional manpower is negligible. Effective education of women agriculturists is not possible without adequate inclusion of women agricultural graduates in various educational systems. Steps need to be taken for promoting women to take up higher education in agriculture.

Commercialisation in Agriculture

Agriculture in India has been a way of life. With the recent changes that have taken place there is higher prospect of commercialisation in this sector. This is all the more crucial with the government policy of privatization, liberalisation and export promotion. This is in line with the international scene and opening of the international market for India after signing of Dunkel proposals.

The Government of India is also taking various steps to give agriculture the status of an industry so that agriculture sector becomes more remunerative.

Summary

India is a model among developing countries in the field of agricultural development. It has evolved a vast and elaborate mechanism for agricultural research, education and extension in a short span of time. It has attained self-sufficiency in food production. This has been possible due to a strong agricultural education system. The country now produces about 10,000 graduates every year to meet the manpower demands in the country.

The nation brought about a green revolution through a system of informal education and training of farmers. Steps have been taken towards diversification, commercialization, liberalisation and industrialisation of education to match the emerging international scenario.

The issues and problems encountered in this sector are manpower planning, making graduates more practical oriented, producing tailor made graduates to meet the changing demands and modernization of management of the educational system. Efforts are also

required for promotion of women in higher agricultural education.

With adequate infrastructural facilities and scientific manpower India holds potential of emerging as a centre of excellence for developing countries and is on a threshold of a second green revolution.

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Annexure - 1

List of State Agricultural Universities in India

1. Andhra Pradesh Agricultural University, Rajendranagar, Hyderabad-500 030 (Andhra Pradesh)
2. Assam Agricultural University, Jorhat-785 013 (Assam)
3. Bidhan Chandra Krishi Vishva Vidyalaya, Mohanpur, Nadia-741 252 (West Bengal)
4. Birsa Agricultural University, Kanke, Ranchi-834 006 (Bihar).
5. Ch. Charan Singh Haryana Agricultural University, Hisar-125 004 (Haryana)
6. Chandra Shekhar Azad University of Agriculture & Technology, Kanpur-208 002 (U.P.)
7. Dr. Y.S. Parmar University of Horticulture & Forestry, Nauni, Solan-173 230 (Himachal Pradesh)
8. G.B. Pant University of Agriculture & Technology, Pantnagar-263 145 Dist. Nainital (U.P.)
9. Gujarat Agricultural University, P.O. Sardar Krushinagar, Banaskantha-385 506 (Gujarat)
10. Himachal Pradesh Krishi Vishvavidyalaya, Palampur, Kangra-176 062 (Himachal Pradesh)
11. Indira Gandhi Krishi Vishva Vidyalaya, Raipur-492 012
12. Jawaharlal Nehru Krishi Vishva Vidyalaya, Jabalpur-482 004 (M.P.)
13. Kerala Agricultural University, Vellanikkara, Trichur-680 654 (Kerala)

14. Konkan Krishi Vidyapeeth, Dapoli-415 712 Dist. Ratnagiri (Maharashtra)
15. Mahatma Phule Krishi Vidyapeeth, Rahuri, Ahmednagar-413 712 (Maharashtra)
16. Marathwada Agricultural University, Parbhani-413 402 (Maharashtra)
17. Narendra Dev University of Agriculture & Technology, Narendranagar, Faizabad-224 229 (U.P.)
18. Orissa University of Agriculture & Technology, Bhubaneswar-751 003 (Orissa)
19. Punjab Agricultural University, Ludhiana-141 004 (Punjab)
20. Puranabroo Krishi Vidyapeeth, Krishinagar, Akola-444 001 (Maharashtra)
21. Rajasthan Agricultural University, Bikaner-334 001 (Rajasthan)
22. Rajendra Agricultural University, Pusa, Samastipur-848 125 (Bihar)
23. Sher-e-Kashmir University of Agricultural Sciences & Technology, Shalimar Campus, P.O. No. 262, Srinagar-191 121 (J & K)
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Marketing of Library & Information Products & Services

Roshan Raina*

Library & Information Centres (LICs) are now able to generate, by virtue of their using advanced computers and softwares, various kinds of information products and services in addition to performing the routine activities and services. However, it is a little unfortunate that these remain largely underutilized, or even, in cases, wholly unutilized. The reasons cited are several and include the following :

- i) efforts in identifying and reaching out the target audience are inadequate;
- ii) level of information awareness or consciousness is still low among the users and there is a need to raise it further; and
- iii) information products and services are "generator" driven rather than "user" driven and in that there remains a "linkage gap" between the generators and users of such products and services.

In keeping with this scenario, Library and Information Managers (LIMs) have, in all earnestness, started taking active interest in building a strong image for their libraries and information centres as well as in the marketing of their products and services. This approach is finding increasing acceptance among the library authorities as well as library users who are now, all the time, subjected to the pressures exerted by various factors such as :

- i) budget cuts,
- ii) growing competition; and
- iii) technological changes and challenges.

In this endeavour, the efforts of the LIMs are focussed towards enriching the information environment of the potential clientele by :

- i) identification and understanding of their potential users (internal as well as external) in relation to their resources and facilities;
- ii) understanding the information needs of such users more accurately and precisely;

- iii) generating information products and services that are tailored to meet the exact needs of such users; and
- iv) being cost-effective in the process of generating information products and services.

These entrepreneurial efforts aimed at provision of innovative products and/or services to : (a) clientele inside the parent institution, but without requiring major new (as opposed to re-allocated) resource inputs; and / or (b) clientele outside the parent institution with a view to generating profit either in the form of money or other resources, will be successful if the LIMs thoroughly understand :

- i) the marketing concept as such;
- ii) marketing in the library context;
- iii) 5 Ps [Planning, Product, Price, Promotion & Place — (Distribution)] — of marketing in the context of information products and services; and
- iv) information products and services as sustainable sources of revenue generation.

Marketing Concept

Marketing approach aims at determining the needs, wants, and demands of the target client/s through designing and delivering appropriate products and/or services, more effectively than competitors, so as to achieve the organizational goals. Important parameters of the concept, thus, are the target clientele, as no organization can, all by itself, satisfy cent-per-cent demands of cent-per-cent clientele; the customer satisfaction by constantly defining (from the clientele point of view) their needs, wants, demands and satisfaction so as to come out with better designed, developed, and delivered products and services than the competitors for achieving the set organizational goals.

Marketing in the Library Context

A marketing exercise in the library context should be carried out with an aim to integrate library goals and objectives with organisational goals and objec-

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tives. These goals and objectives describe the desired future of the organization and its library.¹ The libraries will thrive better if their goals and objectives support the organisational goals and objectives.

The library is traditionally a non-profit organization, and only recently have such organizations become aware of the need to market their products and services. Library and Information Products and Services (LIPS) are now getting recognized as saleable and there is a constant market for these. Like all other saleable products, LIPS have to be what the clientele want and in a form that they can be easily used. The only difference in LIPS and the other saleable products is that the former are self-regenerating. In other words, even after having been given/sold once, both giver as well as receiver retain it and the process goes on and on. As such, one time buyer of LIPS can become competitor of the one-time seller, in cases.

An efficient marketing audit which considers the mission, goals, and objectives of a library vis-a-vis its organization leads to better examination of the library's activities, its needs and capabilities.²

Given the intangible nature of the information, it is rather difficult to sell LIPS. LIPS will however sell well if the generators create a high level of confidence among the clientele in terms of the i) benefits, ii) credibility; and iii) reliability of their LIPS. Also, since the value of information varies from clientele to clientele as well as from circumstance to circumstance, the right information to the right user at the right time is worth a fortune. The role of information providers has, therefore, to be more aggressive.

In the field of marketing of LIPS, the providers can only promise a certain amount of clientele satisfaction. User surveys are essential to give feedback at regular intervals concerning the expectations of the clientele. Their involvement as "friends of the library", and as "advisory bodies" can reveal a feedback that would better LIPS. In other words, feedback becomes useful in modifying LIPS to meet the changing needs of the clientele.

5 Ps of Marketing in the Context of LIPS

Planning

Planning is intended to : i) set and define the goals and objectives of the marketing of LIPS; ii) identify the target clientele; and iii) discover their needs and preferences so that the LICs may improve their LIPS for the greater satisfaction of their users. For planning to be successful, it is essential to base the exercise

on the following important parameters :

- i) resources — men (women), material and equipment;
- ii) finances; and
- iii) distribution—products as well as the vehicle.

A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis constitutes the backbone of the planning exercise, where in the objectives, (what to achieve) and the strategies (how to achieve) of the process are kept in view.

The Products

Generators must recognize the fact that information is saleable, and there is an increasing market for it. Therefore the information product or service has to be exactly as per the customers want and in a form that they can easily use. Value of an information product or service greatly enhances if it is provided in a readily usable form. Important decisions, one has to take about the product include the : i) Brand; ii) Characteristics; iii) Options; iv) Packaging; v) Quality; vi) Service; vii) Style; and viii) Warranty.

Price

The price of LIPS includes direct and indirect costs needed to produce them. In library and information context, price relates to what the client must give up to use the product or service offered.³ Information products unlike many other products have many pricing peculiarities. Its value fluctuates from user to user, time to time, place to place, and so on. Hence, pricing of the information product or service has to be according to its value, which obviously will be different from one buyer to another. This different pricing strategy also helps to segregate clientele into various groups to be charged the prices they would be willing to pay. Such a segmentation also helps to :

- i) understand better how the users value different services and then to be more user oriented (e.g. market-oriented);
- ii) be able to spread the overall working load;
- iii) understand why and where the costs occur; and
- iv) to save limited financial resources for improving old services and/or for offering new services.

Given this, the pricing strategies will have to be flexible to accommodate the needs of both casual as

(Contd. on page 15)

Curriculum for Teacher Education

R.S. Trivedi*

In a world characterised by rapid changes in knowledge, technology and management, teachers by and large find themselves out of touch with intellectual and other forces that shape the society. New conditions and new knowledge have put us at sixes and sevens, and at sixes and sevens we are doomed to remain until we are able to achieve a new synthesis. On the one hand, we stupidly cling to traditional subjects that have outlived their utility, while on the other hand we grope for new curricular fads. We expect pedagogical methods at the expense of the subject matter because we are uncertain as to the values of what we are teaching and the aims we want to achieve.

Management consultant, Peter Drucker, and futurist, Alvin Toffler both have predicted that the currency of the future economy will be knowledge. Therefore ours will gradually become a society wherein generation, dissemination and organisation of knowledge will be the primary occupation. Teachers of the new world are required not only to refashion their behaviour and role but retool the programme of instruction. Industry and business are retooling themselves.

Teachers have to carefully understand the new prominent characteristics of modern era. These characteristics are (i) scientific temper, (ii) objectivity, (iii) achievement motivation, (iv) merit and excellence, and (v) faith in change. The world of tomorrow would usher in an information-rich and technology intensive society. This calls for a new approach to learning and a new learning delivery system. Capacity to learn will be more important than what is learnt. Teacher education has to establish relevance with the new emerging society.

Therefore the curriculum for teacher education has to research for balance in the curricular foundations of (a) quality, (b) quantity, and (c) integrity. "The responsibility of the present generation of adults is to ensure that the brains of future generation are not destroyed in classroom". This is an indicator for teacher education that young students equip themselves for new challenges.

The new teacher education calls upon to pay attention to a few assumptions, viz. (1) challenges may

not be looked upon as threats; (ii) knowledge is the chief source of production; (iii) teacher status aims at being intellectual; (iv) the quality of life aims at the quality of life for every one; and (v) it is not mass education but education for all that is the key to educational development.

The new teacher education has to concentrate on retooling school and refashioning teacher behaviour. This could be done by restructuring the curriculum based on (i) science component on which professional practice depends; (ii) engineering component on which rests the day-to-day diagnostic problem solving and practices; and (iii) skills and attitudes that affect the teacher behaviour.

Professionalism in teachers is to be awakened by emphasizing the professional requirements summed up in the components mentioned above. The teacher perception of change and of new horizons has to be improved. A teacher as a professional has to be aware of constantly influencing interaction between education system and the broader socio-economic system. Education has to play the role of coordination of means, linking resources with a proper frame to innovate and experiment. Teacher professional, therefore, has to be oriented, socialised in the process of professional institutionalization. A teacher professional has to be sensitive towards the management and delivery of educational benefits to the society as a whole. A teacher professional with his training background has to ask himself a few questions, viz. (a) is this education responding to new situation? do I understand the problems of my client; (c) is the curriculum I am handling in tune?; and (d) will my colleagues and I be able to influence the future educational programmes? Teacher education has to pay attention to the institutional practices and restructure them. It would be better if teachers in their pre-service programme are given 40% theory programme and 60% information gathering as feedback on the job practising skills to diagnose the classroom behaviour in the teaching learning continuum. This prescription will equip teachers intellectually for their job. This will result in their professional build up.

Romantic approach to a teacher will not help him in building up a professional career. Let not certification requirements provide an artificial protection to teachers' incompetence.

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All India Council of Physical Education

Some Suggestions

Devinder Kumar Kansal*

Introduction

Many educationists have been making efforts to make the educative process result in the total development of children by improving all of their physical, mental, social, emotional and spiritual faculties. However, till date, education is restricted mainly to the mental faculty with a little emphasis on other aspects. Although attempts have been made from time to time to make physical education an integral part of general education, its practical impact is yet to be realised. Just after independence, Radhakrishnan Commission had also recommended that all students be required to take a thorough physical examination every year.

There have been many attempts to develop proper physical education network in the educational institutions of the country. The importance of sports, regular physical exercises, balanced dietary habits, regularity, punctuality and discipline—all forming major components of physical education courses—in making the students physically fit as well as of balanced personality, is accepted by one and all. But we are yet to create a contingent of competent resource persons for manning the desired network of physical education and sports teaching in the country. The present dismal condition is mainly due to the absence of any central controlling agency. During the last few years, a large number of private, substandard, unevenly distributed colleges of physical education have come up in the country, especially in Maharashtra. Further, the course contents and nomenclature of physical education and sports degrees have been non-uniform and inconsistent with the requirements of our schools and other educational institutions. Sports are very important but they constitute only one aspect of physical education, others being health, weight control, physical fitness and integrated personalities of growing citizens leading to active life styles. Even a cursory look at Figure 1(p. 12) indicates that there are a variety of jobs available to physical education students, provided proper job oriented curricula are fol-

lowed in the colleges of physical education. Due to the large gap in demand and production of physical education resource persons, quality has been the main casualty. To check this phenomenon, the central government's Department of Youth Affairs and Sports proposes to establish an All India Council of Physical Education. It has, actually achieved a remarkable milestone in the history of physical education and sports promotion. A draft note regarding the establishment of an All India Council of Physical Education (AICPE) is reported to have been prepared for the consideration of the Cabinet. Expedited introduction of AICPE Act providing legislative powers to AICPE with statutory authority, ensuring coordinated and integrated development of physical education and maintenance of its standards through the appointment of professional experts in AICPE on the pattern of All India Council of Technical Education (AICTE), will certainly help the nation in giving a fillip to its entire educational system by introducing appropriate environment to develop in each student a balanced, physically developed, and socially, morally and mentally sound integrated personality. Education For All' policy of the government, coupled with integration of physical education in the general educational curriculum will ensure the promotion of active life styles leading to better health of each citizen and better national performance in sports.

The Backdrop

A meeting of the major associations of physical education and sports sciences was convened by Shri Mukul Wasnik, the Minister of State in the Deptt. of Youth Affairs & Sports, Ministry of Human Resource Development, on 16th May, 1994. The author had the privilege to attend the same in his capacity as President of the National Association of Physical Education and Sports Sciences. The most significant decision taken in the meeting was that a draft proposal for the constitution of an AICPE be presented to both the Houses of the Parliament so that an Act could be passed for the establishment of AICPE to ensure the co-ordinated development of physical education in accordance with the approved standards. Welcome as it is, the author will like to add a word of caution. Unlike other fields, say Engineering and Technology where

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India has not only a large repository of resource persons but also has made a remarkable contribution to the technical manpower of many foreign countries, there are only a few professional experts and genuine institutions in the field of physical education and sports sciences in India. Therefore, great care is required in the proper constitution of AICPE so that it is able to accomplish a challenging job proposed to be assigned to it.

Some Suggestions

Keeping in view the paucity of qualified manpower in physical education and special requirements of the proposed Council, it is suggested that the following points be considered for inclusion in AICPE Act, 1995.

1) Physical Education be defined in the act to mean all programmes of education, research and training in physical education, health education and sports sciences;

2) No courses/degrees, diplomas, certificates should be recognized for getting jobs or higher education unless the applicants having passed such courses get their registration number from AICPE;

3) The member secretary of AICPE should be a whole time employee appointed by the central govt. He must not have any additional charge;

4) Functions of AICPE must include the following in addition to its other general functions

- i) to coordinate the development of Physical Education and Sports Sciences throughout India;
- ii) to consider recommendations from state governments/Union territories regarding physical education and sports sciences and take decisions on matters related to physical education & sports sciences on which no recommen-

JOB AVENUES IN PHYSICAL EDUCATION AND SPORTS SCIENCES

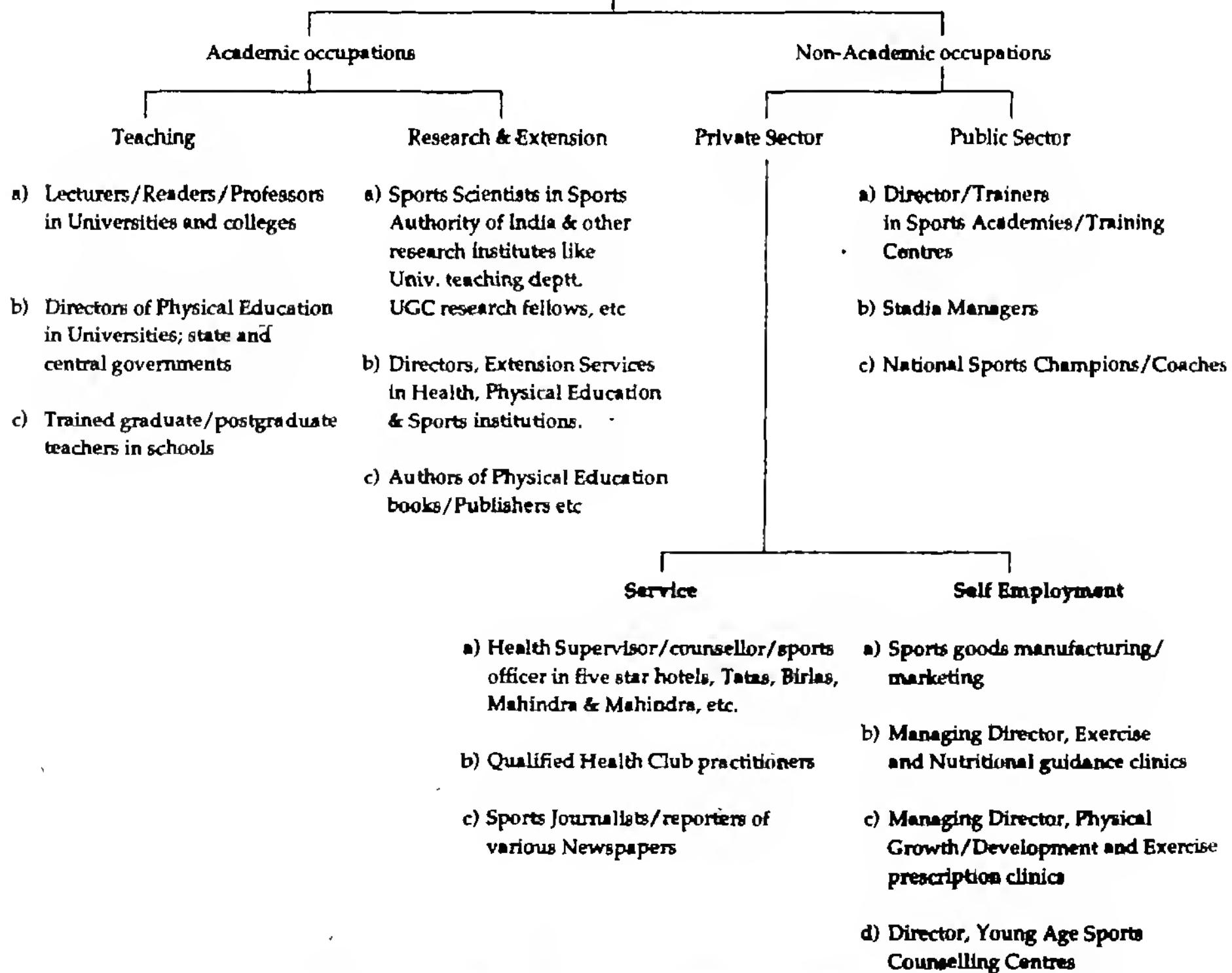


Fig. 1 : Classification of job potentials for Physical Education and Sports Science students.

dations are received from state governments, union territories;

- iii) to take all necessary steps to prevent commercialization of physical education and sports sciences;
- iv) to take all necessary steps to introduce practical field and laboratory training of physical fitness testing and modern sports science techniques in various courses of physical education and sports sciences of Indian universities.

5) The *General Body* of the AICPE may include the following :

- i) Chairman
- ii) Vice-Chairman
- iii) The Secretary to the Govt. of India in the Ministry of Human Resource Development dealing with Youth Affairs and Sports.
- iv) The Secretary to the Govt. of India in the Ministry of Finance.
- v) The Secretary to the Govt. of India in the Ministry of Health dealing with Health Education.
- vi) Director General, Sports Authority of India.
- vii) The Education Adviser (General) to the Govt. of India.
- viii) The Chairmen of the five Regional Committees of AICPE.
- ix) The Chairman of the All India Board of Vocational Education.
- x) Deans/Principals of all such postgraduate central govt. and state govt. colleges of Physical Education and Sports Sciences as conduct any Master's Degree programme in Physical Education and Sports, subject to a maximum of ten, to be appointed by the central government by rotation in the alphabetical order to represent the States and the Union Territories.
- xi) Four experts who have chaired or presented papers in international conferences on physical education and sports sciences.
- xii) One member to be appointed by the central govt. to represent the Ministry of Science and Technology of the Central Govt.

- xiii) Two members of parliament out of whom one shall be elected by the house of the people and one by the council of states.
- xiv) Six members to be appointed by the central govt. to represent professional associations/ organizations in the field of Physical Education and Sports Sciences.
- xv) Five members to be appointed by the central govt. to represent :
 - i) Central Advisory Board of Education.
 - ii) Physical Anthropology, Psychology, Education and Physiology Sections of Indian Science Congress.
- xvi) Not more than three members to be appointed by central govt. to represent such interests not covered by the foregoing classes as the central govt. may deem fit.
- xvii) Director, Institute of Applied Manpower Research, New Delhi.
- xviii) One member by rotation from among Director, Indian Council of Medical Research, Director, AIIMS, President, IMA, President, IASM.
- xix) Director, Indian Council of Child Development.
- xx) Director, National Institute of Nutrition.
- xxi) Three members with expertise and distinction in areas relevant to Physical Education to be nominated by the Chairman of the Council.
- xxii) Two members to represent teachers training institutions of Physical Education other than govt. institutions.
- xxiii) One representative of the Association of Indian Universities.
- xxiv) One representative of the U.G.C.

6) The *Executive Council* of AICPE should comprise

- i) Chairman of the Council
- ii) Vice-Chairman of the Council
- iii) Secretary to the Govt. of India dealing with Education.
- iv) Secretary to the Govt. of India dealing with Deptt. of Youth Affairs & Sports.

- v) Three chairmen of Regional Committees by rotation.
- vi) All Chairmen of all India Boards of Studies in physical education and sports sciences of the Council.
- vii) A member of the Council representing the Ministry of Finance to be nominated by the Finance Ministry.
- viii) Two members of the Council under clause (5) section (x) by rotation.
- ix) Director-General, Sports Authority of India.
- x) One member representing the Ministry of Science & Technology.
- xi) Two members of the Council under clause (5) section (xv).
- xii) Two members by rotation (by seniority in age) among the council under clause (5) section (xvi) to (xxi), (xxiii) and (xxiv).
- xiii) Two members of the council representing Private Teachers Training Institutes in Physical Education and/or Sports Sciences.
- xiv) Member-Secretary of the Council.

The Chairman or in his absence the Vice-Chairman of the Council or in the absence of both, any other member chosen by the members present at the meeting shall preside at the meeting.

The Executive Committee shall meet atleast thrice a year at such time and places, and shall observe such rules and procedures the council may provide.

Ten members will form the quorum at the meetings of the Council.

7) The following Regional Committees and Boards of Studies will be established by the Council:

I. Regional Committees

The Council shall have following five regional committees:

- i) The Northern Regional Committee with its office at Shimla or Chandigarh;

- ii) The Southern Regional Committee with its office at Madras or Bangalore or Trivandrum;
- iii) The Central Regional Committee with its office at Gwalior. (M.P.) or New Delhi;
- iv) The Western Regional Committee with its office at Bombay or Gandhinagar;
- v) The Eastern Regional Committee with its office at Calcutta.

The Regional Committees will assist and advise the Council on all aspects of planning, promoting and regulating Physical Education within the region.

The region and the constitution and functions of regional committees will be prescribed by the regulations of the Council.

II. Boards of Studies

The Council shall establish the following Boards of studies:

- i) All India Board of Studies in undergraduate courses in Physical Education and Sports Sciences;
- ii) All India Board of Studies in postgraduate courses in Physical Education and Sports Sciences.
- iii) All India Board of Studies in Secondary and Senior Secondary courses in Physical Education and Sports.
- iv) All India Board of Studies in courses of Physical Education and Sports in middle schools.
- v) All India Board of Studies in courses of Physical Education and Sports Sciences in Primary and pre-Primary Schools.
- vi) The Council may if it considers necessary, establish such other Boards of Studies as it may deem fit.

Every Board of Studies shall advise the executive committee on academic matters falling in its area of concern including norms, standards, model curricula, facilities required and contents & structure of the courses in Physical Education, Health Education & Sports Sciences.

The Council will prescribe regulations for the areas of concern, powers, functions and constitution of various Boards of Studies established by it.

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Marketing of Library & Information Products & Services

(Contd. from page 9)

well as regular users. Pricing should encourage interaction with the system and should maximize the use of system's powerful features. It should also be readily correlated with the value of the product.

Promotion

To make the existence of the products and services known to the potential customers is what falls under the domain of promotion, which sometimes involves even the teaching of the customer, the value of the product and/or service. However, word of mouth promotion is the best promotion in the library context.⁴ A satisfied and happy client will almost guarantee continued and successful promotion. Besides, the following activities aimed at promoting LIPS can be undertaken by the LIMs.

Advertising — Print ads; posters and/or displays, etc.

Sales Promotion — Direct mail.

Public Relations — Newsletters; news releases; and popular articles.

Personal Selling — Seminar or workshop presentations.

Place (Distribution)

LIPS must be available where and when needed

i.e. these should be available at the right time and at the place where customers want them to be available.

LIPS as Sustainable Sources of Revenue Generation

LIPS will be sustainable if they are generated on the basis of the identification of the clientele [in various constituencies, internal as well as external, casual as well as serious, existing as well as prospective] and their exact information needs. Continuous monitoring of the information needs through need surveys, questionnaires, informal contacts with the users as well as non-users, service statistics, etc helps keeping the clientele and (their) need profiles updated. By the same token, the clientele must know about the LIPS. In other words, LIPS should be what the customers want and not what LIMs want to sell. Flexibility in LIPS to accommodate changes in the needs of the customers, changes in the methods, systems, procedures followed in their generation as well as delivery, ensures better sustainability.

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Scientific Temper

Dr. P.C. Alexander, Governor of Maharashtra, delivered the Convocation Address at the thirty third convocation of the Indian Institute of Technology, Bombay. He said, "Scientific temper is not something that can be brought about by an expansion in the number of institutions of science and technology, but is an attitude of mind characterised by the spirit of enquiry and acceptance of the right to question and to be questioned. This is what John Davey meant when he said that 'education is to teach the child to think and not what to think'. Excerpts.

In terms of numbers the growth of educational institutions has indeed been phenomenal in the last 48 years of our independence. But the crucial question to ask is whether the progress in education has been as satisfactory as the growth in numbers. The number of universities has increased from 25 in 1947 to 197 today, of colleges from 700 to 8000, the number of engineering colleges alone from 46 to 375 and the number of students from 2.6 lakhs to 50 lakhs. Today we have more college teachers than there were college students in 1947. India's population increased from 360 millions to over 900 millions, but the increase in the number of educational institutions has been several times more than the increase in population. The institutions established during the colonial administration were far short of the demand and the need for a substantial expansion of education opportunities was obvious. There was also the need for coping with the additional demand for higher education from the economically and socially disadvantaged sections who in the past had no opportunities for such education. While the growth in numbers was necessary and most welcome, the disturbing feature of this growth is that a good proportion of these in-

stitutions are weak in basic facilities like libraries, laboratories, workshops, classrooms, playgrounds, etc and what is more distressing, they are weakest in having teachers with the right qualifications, motivation and commitment. Today we are faced with the situation of having a small number of very good institutions, a large number of average institutions and a very large number of poor institutions which are plagued by low morale, indiscipline among both teachers and students, heavy failures in public examinations and above all failure to instill in the students correct values and attitudes. Many students have no alternative but to enroll themselves in such substandard institutions.

The shortcomings in school education, both primary and secondary, have been more conspicuous than those in the higher education sector. In spite of all our highly creditable achievements in the field of agriculture, industry, infrastructure, space technology, atomic energy, etc, our inability to provide free and compulsory primary education to all children below 14 years of age stands out as a monumental failure in our post-independence development record. This target was to be achieved within 10 years

of the commencement of the Republic according to Article 45 of the Constitution, but 45 years after the adoption of the Constitution we have the dubious distinction of having the largest number of out-of-school children in the world, roughly 22% of the global total, and the largest number of illiterates.

We can legitimately feel happy at the fact that we have been able to provide primary schools to almost 94% of the rural population within walking distance of 1 km. from the residences, but the distressing side of this picture is that a very large number of these schools do not have the basic requisites to sustain the interest of the children or to provide a sound foundation in education. As many as 44% of these primary schools do not have permanent buildings, more than 6 out of every 10 schools have only two or less teachers, over 50% have no facilities for drinking water, and two thirds do not have playgrounds. It is therefore not surprising that the dropout rate in classes I to V is as high as 47%. The dropout rates of children belonging to the weaker sections and of girl children in the rural areas are much higher. When the foundations are weak, naturally the strength and stability of the whole structure are affected.

Apart from the waste involved in not utilising all the talents in the country through good education, the disparities in standards of education in different institutions are also leading to inequalities in society, thereby frustrating the goals of our democracy. The products of good schools and colleges naturally get a head start in selections to senior services and business careers and thus our education system, unconsciously, serves to create an unequal society consisting of a few with quality education and many

with poor education.

Education and research in science and technology have their own share of inadequacies. We can say with some degree of pride that what we have achieved in the field of education and research in science and technology has been quite creditable compared with the record of most other developing countries. But it is time that we start comparing our record in science and technology with that of the industrially advanced countries, because having reached the level of industrial progress we have already achieved, we should no more be comparing ourselves with the industrially less developed countries.

Let us look at some figures. We often express great satisfaction at the fact that India has the third largest reservoir of scientific and technological manpower in the world. In fact after the dismemberment of the former Soviet Union into 15 states India can now claim to have the second largest reservoir of scientific and technological skills, second only to that of the United States. But if we look at the figures in terms of population we will find that our record while being good is not good enough for a country of our potential and stage of industrial development. The number of persons skilled in science and technology in India is only 4.5 per 1000 while it is 262 per 1000 in Sweden, 185 in Canada and 111 in Japan.

In Research and Development (R&D) India's record is nothing to feel complacent about compared with that of industrially advanced countries. The actual number of persons involved in R&D is just 0.27 per 1000 in India while it is over 5 per 1000 in industrially ad-

vanced countries. Talking in terms of GNP, India spends only 0.89% on R&D while the corresponding figure in the industrially advanced countries is 2 to 3% of GNP. In per capita terms India's R&D expenditure is only \$2.76 whereas it is between \$100 to \$600 in the advanced countries. The common argument in defense of low deployment of funds is that we are a poor country and cannot afford to spare more funds for education and R&D. But the reply to this argument is that because we are a poor country we have to spend more on education and research, as we can hope to get out of poverty and backwardness only through more and better education and more and better R&D.

I am not suggesting that more funds and more institutions by themselves will help India to overcome its poverty and backwardness. Equally important as more funds and more institutions is a radical change in the attitude and outlook of the people. The Education Policy Statement of 1986 says that education has an "aculturing" role and that it "refines sensitivities and perceptions that contribute to national cohesion, a scientific temper and independence of mind and spirit". Quoting from India's ancient scriptures the Policy Statement defines education as "that which liberates i.e. which provides the instruments for liberation from ignorance and oppression". It describes education as a process which "should help eliminate obscurantism, religious fanaticism, violence, superstition and fatalism". The essence of the concept of scientific temper about which Jawaharlal Nehru spoke with great conviction and fervour is this liberation of mind. Scientific temper is not something that can be brought about by an expansion in the number of in-

stitutions of science and technology, but is an attitude of mind characterised by the spirit of enquiry and acceptance of the right to question and to be questioned. This is what John Davey meant when he said that "education is to teach the child to think and not what to think".

It was this spirit of enquiry which had made our civilisation great and rich at a time when most parts of the world were steeped in ignorance and backwardness. It was this spirit of enquiry which made our ancient *Rishis* sharpen their intellects through rigorous training and fine tune their perceptions and enabled them to discover the truths about existence, superior existence *Karma* and *Dharma*, *Atman* and *Brahman* and divine realisation. If they could churn out several millennia ago the great truths embodied in the *Vedas* and *Upanishads*, it was because they were driven by this spirit of enquiry.

The spirit of enquiry and scientific endeavour led to the discoveries of not only the truths of the "inner space" or the mind of man, but also the great truths of the outer space or the universe. It is said of the *Rishis* of old that they had a threefold thrust; they looked inwards i.e. to man's mind and life, they looked outwards i.e. to the universe around them and they looked upwards i.e. to the mysteries of the Super Being. Centuries before western astronomers, mathematicians, physicists and technologists started their studies of the universe, India's ancient scholars had delved deep into subjects like the atom, molecule, space, time, cosmos, etc. It was a great age of enquiry and scientific search in India, an age of scientific spirit and philosophical insight.

However, somewhere down the millennia India lost the spirit of enquiry and scientific adventure, and then began the big slide to decline, intellectual morbidity and spiritual sterility. This great decline started in India at a time when western nations were getting set on the opposite course influenced by great movements like the Renaissance and the Reformation, discoveries of new lands and continents and inventions of new machines, processes and products. It was the age of Copernicus, Christopher Columbus, Martin Luther, John Calvin, the age when man's mind rebelled against passivism and conformity in the West. This spirit of questioning and liberation led to the triumph of ideas like liberty, equality and fraternity and to great revolutions which upset the established order in France and America and eventually to the economic progress of the west through the Industrial Revolution and the harnessing of science and technology to create more employment, more wealth and better standards of living for the people.

While this process was going on in the west, we were fast sinking into blind conformity, ritualism, superstition and obscurantism and eventually became a conquered and colonised people. When the Industrial Revolution was pushing the western countries on to the fast track of economic progress, the reverse process of deindustrialisation was taking place in India. During this long period of the decline of the spirit of enquiry and scientific search, our education system became irrelevant to the needs of progress and instead was reduced to a process of just helping a few people to secure entry passes to the job market in the form of degrees and diplomas. This was the posi-

tion we found ourselves in at the time of independence. Great things have happened in the field of education since independence, but as pointed out earlier in my speech the problem has been that many things did not happen as we had planned for.

However, I am happy I can end this talk on a optimistic note. As we are getting ready for the dawn of the 21st century, I feel confident that things are going to be much brighter for education. There are two important reasons for this optimism. The first is the announcement of the Prime Minister that the share of education will be raised to 6% of the GNP from its present level of 3.4% from the next plan period. This is a very significant decision which can bring about a major change in the entire educational scenario. This increase is not only a near doubling of the funds in terms of percentage, but a substantial addition in absolute terms because of the anticipated vast expansion in the size of GNP. Availability of funds of this size should certainly help in overcoming many of the shortcomings I have flagged earlier.

The second reason for optimism arises from the imperatives

of the New Economic Policy and globalisation of the economy. Massive new investments in manufacturing, services and infrastructure and introduction of new technologies in several sectors of the economy will bring along with them the compulsions for a total re-orientation of the education system and retooling of R&D. It is obvious that education and research in all disciplines especially management, science and technology will have to change radically in content and quality if India is to cope with the exacting requirements of globalisation and the Technological Revolution. We missed the Industrial Revolution because we were a conquered people at that time. We cannot afford to miss the Technological Revolution which is sweeping across the world today transforming the fortunes of many developed and even developing countries. The imperatives of change in the industrial and infrastructure sectors will force us to bring about the much needed changes in education and R&D as without such changes it will be impossible to sustain the momentum of economic progress. Right education will suggest itself as the right solution to the problem of coping with the demands of globalisation and the Technological Revolution.

Excerpts from the Report

by

Suhas Sukhatme,
Director, Indian Institute of Technology, Bombay

Academic Programmes

Existing Programmes

During the year, the Institute conducted educational programmes leading to the degrees of B.Tech., M.Sc., M.Des., M.Phil.,

M.Tech., and Ph.D., in the following areas :

* B.Tech. — Aerospace Engineering, Chemical Engineering, Civil Engineering, Computer Science & Engineering, Electrical En-

gineering, Engineering Physics, Mechanical Engineering, Metallurgical Engineering & Materials Science.

* M.Sc. — Biotechnology, Chemistry, Physics, Earth Sciences, Mathematics.

* M.Des. — Industrial Design, Visual Communication.

* M.Phil. — Planning & Development.

* M.Tech. — Aerospace Engineering, Chemical Engineering, Civil Engineering, Computer Science & Engineering, Electrical Engineering, Earth Sciences, Geo-exploration, Mechanical Engineering, Metallurgical Engineering & Materials Science.

Interdisciplinary Programmes

Biomedical Engineering, Corrosion Science & Engineering, Energy Systems Engineering, Environmental Science & Engineering, Industrial Engineering & Operations Research, Reliability Engineering, Systems and Control Engineering, Industrial Management.

* Ph.D. — All engineering disciplines, interdisciplinary areas, science disciplines, and Humanities and Social Sciences.

New Programmes

The Master of Management programme will begin from this academic session. The first batch will consist of 30 students selected from a group of more than 400 applicants.

The Mathematics Department has received approval to start, in lieu of the present programme, two distinct programmes — M.Sc. in Mathematics, and M.Sc. in Applied Statistics and Informatics. 20 students will be admitted to the first programme, primarily meant for

students who intend to undertake research/teaching activity as their career, and 20 to the second Programme, meant for students who aspire to take up professions that demand various skills and techniques of Mathematics, Applied Statistics and Informatics.

Quality Improvement Programme

The Quality Improvement programme launched in the year 1970 by the Ministry of Human Resource Development as a means of upgrading the expertise and capabilities of teachers in Engineering colleges in the country, is now in its Silver Jubilee Year. Since 1994 this programme is being sponsored by the AICTE.

Research and Development Activities (R&D)

Sponsored Projects

During the year there has been a significant increase in the R & D activities. Sponsored research projects generated a revenue of Rs. 8.25 crores during the year as against Rs. 5.15 crores in the previous year. In addition, funding from the All India Council for Technical Education was obtained for 10 projects under Thrust Areas Programmes, and R & D Schemes — with a total outlay of approximately Rs. 1.00 crore. A total of 77 projects were funded during the year by various agencies.

An agreement has been signed with DuPont Agricultural Products, USA for carrying out synthesis and development of new chemical compounds including isolation of natural products which can be utilized in Agriculture and Public Health Programmes. A Memorandum of Understanding has been signed with Moldflow Pty. Ltd., Australia for starting a Mold Design Centre at IIT Bombay with the

broad objectives of establishing facilities for computer design and engineering for the Plastics Industry, augmenting R&D efforts in the area of mold design, and disseminating knowledge on current developments and methodologies to industry in the form of training programmes. In pursuance of the objectives, M/s. Moldflow have installed two modules of their current proprietary Mold Design Software, and commenced training of two IIT Bombay Staff in the use of their software. Under another project, an Apple Academy is being established with the help of Apple Computers Inc, USA.

Technology Development Mission

Projects

The Technology Development Mission Projects in the area of Food Process Engineering and Integrated Design and Competitive Manufacture, formal approval and sanction of funds to the tune of Rs. 237.74 lakhs and 234.72 lakhs respectively, for the period 1993-95. Some of the projects in these generic areas are being partially supported by industries. The projects being pursued in the two missions are as follows :

Food Process Engineering, Development of Super Critical Fluid Extraction Systems — Design and Technology, Development of Cryogenic Individual Quick Freezing Tunnel for Sea Foods — Fermentative and Enzyme-based processing for Value Addition, Drying and Controlled Atmosphere Storage System for Preservation of Food Grains, Integrated Design & Competitive Manufacturing, Switch-gear Mechanism Analysis, FHP Motors Process, Simulator Shape Prototype. During the year preliminary work on techno-economic

(Contd. on page 22)

HUMAN RESOURCE

HEALTH CARE SERVICES: ALL INDIA

Year	Actuals in Number				Per 100,000 Population		
	1961	1971	1981	1991	1961	1971	1981
Hospitals	3054	3862	6805	11174	.70	.70	.99
Beds	229634	348655	504538	664135	52.28	63.60	73.64
Dispensaries	9406	12180	16754	27431	2.14	2.22	2.45
Allopathy Doctors	*	151129	268712	398238	*	27.57	39.22
Nurses	35584	80620	150399	311235	8.10	14.71	21.95
PHCs	2695	5131	5568	22243	0.75	1.17	1.06
Sub Centres	—	27929	51192	131098	—	6.36	9.74

Notes : Beds = Beds in hospitals and dispensaries. Nurses = Nurses and Midwives. PHCs = Primary Health Centres.

* = Not available. — = Not applicable.

DOCTORS AND NURSES : ALL INDIA

Number per 1,00,000 population

Year	1961		1971		1981		1991
	Doctors	Nurses	Doctors	Nurses	Doctors	Nurses	Doctors
<i>Major States</i>							
Andhra Pradesh	8.97	22.18	16.66	43.05	20.32	49.67	
Assam	8.97	32.05	11.04	36.35	13.00	47.08	
Bihar	2.83	18.54	6.52	26.22	11.09	30.55	
Gujarat	*	26.23	9.54	42.99	14.45	52.98	
Haryana	*	*	*	*	13.97	*	
Jammu and Kashmir	*	16.22	*	44.53	*	55.80	
Karnataka	*	26.43	6.29	51.05	13.94	98.58	
Kerala	.33	27.09	19.43	45.95	37.48	56.72	
Madhya Pradesh	5.54	11.53	9.55	8.07	15.50	16.92	
Maharashtra	23.02	45.28	39.10	65.43	54.03	62.72	
Orissa	2.87	19.70	7.49	30.67	11.26	35.19	
Punjab	28.42	91.20	64.67	127.88	94.56	134.51	
Rajasthan	*	12.95	11.01	25.43	15.33	32.01	
Tamil Nadu	23.43	45.46	34.34	65.69	51.75	81.94	
Uttar Pradesh	3.66	14.59	3.86	21.54	6.78	23.91	
West Bengal	13.89	58.02	11.38	60.15	16.23	61.38	
<i>Other States</i>							
Arunachal Pradesh	*	*	*	*	*	*	*
Goa, Daman and Diu	*	*	*	*	*	*	*
Mizoram	*	*	*	*	*	*	*
Pondichery	*	*	*	*	*	*	*
Himachal Pradesh	*	*	*	*	4.44	*	*
Manipur	*	*	*	*	*	*	*
Meghalaya	*	*	*	*	*	*	*
Nagaland	*	*	*	*	*	*	*
Sikkim	*	*	*	*	*	*	*
Tripura	*	*	*	*	*	*	*
All India	8.10	27.57	14.71	39.22	21.95	47.19	

Note: Only rural population taken. * Not available

DEVELOPMENT DATA - 5

EXPENDITURE ON HEALTH : ALL INDIA

Year	1950-51	1955-56	1960-61	1965-66	1970-71	1975-76	1980-81	1985-86	1991-92	1992-93	1993-94	1994-95
										RE	BE	
A : Amount In Rupees Million												
venue expenditure												
health	218.55	509.83	1076.82	1685.90	3351.18	6111.66	11888.12	27153.91	52010.57	62039.06	71825.18	78666.34
disease programme	23.73	89.49	280.51	263.40	456.86	824.95	1540.33	3174.14	5505.76	6722.49	7479.62	7477.53
hospitals and dispensaries	96.15	193.87	427.92	654.07	1249.59	2768.22	5147.53	10270.37	13926.80	17161.34	19724.31	20255.54
medical education												
training research	10.91	12.73	60.31	126.19	239.60	534.05	1077.90	2353.92	5299.40	6818.85	7845.83	6046.26
family welfare*	—	—	—	—	—	787.70	1419.47	4871.83	10085.36	10264.17	12122.46	13586.78
ernal and child health services*	—	—	—	—	—	23.66	60.38	136.14	1056.21	1117.25	1397.52	599.35
alth administration	30.62	51.78	119.65	266.14	671.90	330.19	583.99	1285.00	2335.95	2771.20	3228.89	3307.04
AP revenue												
expenditure health*	—	—	—	—	—	673.23	969.00	2507.22	4385.05	2604.59	3358.05	3507.89
total government revenue												
expenditure	8136.09	11703.81	21001.18	51385.76	87369.73	174933.0	361277.7	825301.3	1670133	2287180	2652342	2987083
B : Percentage Distribution												
venue expenditure												
health	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
disease programme	10.86	17.55	26.05	15.62	13.63	13.50	12.96	11.69	10.59	10.84	10.41	9.51
hospitals and dispensaries	43.99	38.03	39.74	38.80	37.29	45.29	43.30	37.82	26.78	27.66	27.46	25.75
medical education												
training research	4.99	2.50	5.60	7.49	7.15	8.74	9.07	8.67	10.19	10.99	10.92	7.69
family welfare*	—	—	—	—	—	12.89	11.94	17.94	19.39	16.54	16.88	17.27
ernal and child health services*	—	—	—	—	—	0.39	0.51	0.50	2.03	1.80	1.95	0.76
alth administration	14.01	10.16	11.11	15.79	20.05	5.40	4.91	4.73	4.49	4.47	4.50	4.20
venue expenditure												
health	2.69	4.36	5.13	3.28	3.84	3.49	3.29	3.29	3.11	2.71	2.71	2.63
C : Expenditure Per Capita in Rupees												
disease programme	0.07	0.22	0.64	0.53	0.83	1.34	2.25	4.15	6.37	7.60	8.27	8.09
hospitals and dispensaries	0.27	0.48	0.97	1.32	2.28	4.49	7.51	13.43	16.10	19.41	21.82	21.91
venue expenditure												
health	0.61	1.27	2.45	3.41	6.11	9.91	17.35	35.52	60.13	70.15	79.44	85.10

Notes: RE= Revised Estimate; BE= Budget Estimate; CAP= Capital. For the year 1994-95, disease programme, hospitals and dispensaries, medical education and research, family welfare, MCH, health administration excludes central government expenditure as it was not available.

* (i) Family welfare and MCH from 1950-51 to 1970-71 included in medical and public health account heads. (ii) Cap revenue expenditure health are shown separately only from the 70s prior to which it was under the Ministry of Works.

Source: Ravi Duggal, Sunil Nandraj, Asha Vadair. Health Expenditure across States—Part 1. *Economic and Political Weekly* 15 April 1995.

(Contd. from page 19)

surveys, technology status reports, specification for products/processes/prototypes, preliminary designs/analysis etc was undertaken.

Technology Transfer

Substantial progress was recorded on the production of improved prototypes for a Fuel Efficiency Logger. Two sponsored projects have led to commercially useful products, viz., Laser Displacement Transducer, and, Feature Based Modular and Computer Aided Process Planning Systems Software for CNC Turning Centres (F-TURN).

Titan Alloys Ltd., using the electroslag remelting process followed by rolling, has gone into commercial production in January 1995. The complete technology and design of electroslag remelting for this plant was provided by IIT Bombay. It is the first special steels plant set up in the country using fully indigenous technology and equipments.

Consultancy

During the year, revenues from consultancy projects amounted to Rs. 2.13 crores as against Rs. 2.00 crores during 1993-94.

Some of the major consultancy jobs undertaken during the year include

- * Planning and implementation of computer systems in banks and financial institutions;

- * Setting up of electroslag remelting facility at Vikram Sarabhai Space Centre, Trivandrum;

- * Expert advice and training of engineers of the Maharashtra Government engaged in reconstruction work in the earthquake affected areas in Marathwada region;

- * Development of N-methyl morpholin oxide;

- * Advice and coordination of VLSI CAD activities;

- * Coordination of C-DAC projects;

- * Development support for design of dual wavelength photometer;

- * Environmental monitoring of Konkan Railway alignment;

- * Checking for safety of buildings;

- * Design and testing of cooling systems.

A significant project, now under rapid implementation by the Post and Telegraphs Department, concerned its new corporate logo for which the design was provided by the Institute Faculty. Another interesting project was the design of a Petrol Dispensing Station for Indian Oil Corporation. An important project completed during the year concerned the development of SFL Circuit Partition Generator for NTT, Japan.

The Institute provided limited, but critical testing and evaluation services to government departments and industry. This included the Regional Sophisticated Instrumentation Centre facilities which analysed a total of 6293 samples during the year 1994-95.

Continuing Education Programme (CEP) & Extension Activities

During the past one year, 55 different programmes have been conducted in which about 1000 engineers and scientists from industries and research and development organizations have participated. 17 open programmes were held on varied topics like managerial development, microcontrollers, internet and multimedia, venture capital, low cost automation, etc 34

in-house programmes were conducted either at IIT or on the company premises for organizations like UTI, M&M, ECIL, Indian Railway Institute of Electrical Engineers, Tata Unisys, Indian Navy, Syntel, Directorate of Technical Education, HPCL, etc.

- * A lecture series spread over a year for the Power Plant Group of Larsen & Toubro Ltd.,

- * Certificate Courses on Information Technology.

As part of a British Council funded project, several batches of engineers from Government of Andhra Pradesh are being trained in the area of Building Construction and Maintenance. A series of CEP courses have also been conducted for Mahindra & Mahindra for the benefit of their engineers.

The Computer Aided Design Centre (CAD) offered several Short Term courses for the process industries on topics like Piping Engineering, Process Simulation, Hazard Analysis and Risk Management, Adsorptive Separation Technology, Engineering Optimization, Pinch Analysis, Real Time Computing Applications. The Centre also organized several in-house courses for NOCIL, Reliance Industries., Xytel India Pvt. Ltd., and Larsen & Toubro Ltd.

Substantial achievements were recorded on Project Impact — a pilot project on manpower development in Electronics and Computers (pursued with assistance from the World Bank and the Swiss Development Corporation Agency). Two complete learning material modules and three draft learning material modules were completed during the year. Three Instruction Enhancement Programmes were conducted and six continuing education programmes were completed.

Infrastructure Development

Computer upgradation and augmentation has continued vigorously across the departments. LAN, giving internet connectivity within departments has been established in most departments, and many departmental LANs have also been connected to the Cyber Mainframe Computer and to the Institute LAN. Hindi word processing software is available on work stations connected to the Institute LAN and the software has also been installed on many of the de-

partmental office computers. Many new measuring and testing equipment systems have been acquired and a helium liquefaction system serving as an Institute facility is now in operation.

This year the library purchased 3276 books, procured 1198 periodicals and added other material in the form of back volume reports, standards, films, educational videos, CD-ROMs etc numbering 3469. On 31st March 1995, the holding of books was 1,83,949 and the total holding including other materials

was 3,313,203. A useful facility at the Central Library is the CD-ROM work station with eight databases on CD-ROM including three new databases, namely, CA Surveyor, Compendex Plus covering the period 1990 to 1994, and Chemical Abstracts 12th Collective Index.

Student Activities

In Inter-IIT sports, IIT Bombay made its mark by winning gold medals in badminton, table tennis, volleyball and aquatics.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/Officer to be contacted
Sep. 2-3, 1995	National Seminar on Management of Technical Education	To meet the presentday challenges in technical education	Indian Society for Technical Education	Prof. B. Kuppuraju, Mech. Engg. Deptt., Sathyabhama Engg. College, Madras-600096
Sept 11-20, 1995	Training Programme in Computer Application in Social Sciences	To orient the social science researchers to fundamental of computer, computer data processing, quantification method and use of SPSS	Centre for Social Studies, Surat	Vimal Trivedi, Course Director, Centre for Social Studies, South Gujarat University Campus, Udhna Magadala Road, Surat-395 007
Nov. 8-9, 1995	National Seminar on Management of Technical Education	To meet the presentday challenges in technical education	Indian Society for Technical Education	Dr. M. M. Malhotra, Principal, Technical Teachers Training Institute, Chandigarh-160019
Dec. 14-16, 1995	International Seminar on Management of Technical Education	Theme : Towards Technological Society	Directorate of Technical Education, Maharashtra State	Conference Secretariat, C/o Directorate of Technical Education, 3 Mahapalika Marg, Bombay-400001
Dec 20-22, 1995	International Conference on Advances in Mechanical Engineering	To take stock of recent developments and envision future trends in the field of Mechanical Engineering	Indian Institute of Science, Bangalore	Dr. T.S. Mruthyunjaya, Convenor, ICAME, Department of Mechanical Engineering, IISc, Bangalore-560012

CAMPUS NEWS

Andhra Varsity Centre for Marine Studies

Dr A.E. Muthunayagam, Secretary, Department of Ocean Development, Government of India, laid the foundation-stone for the Centre for Coastal Aquaculture and Marine Bio-Technology (CCA-MBT) and inaugurated three courses — MSc in Coastal Aquaculture and Marine Bio-Technology, Diploma in Coastal Aquaculture and Diploma in Coastal Zone Management — in Andhra University recently. Mr J V R Prasada Rao, Joint Secretary, Department of Ocean Development, Government of India, laid the foundation-stone for Mariculture Laboratories. Dr M Gopalakrishna Reddy, Vice-Chancellor of Andhra University, presided.

Speaking on the occasion, Dr Muthunayagam underlined the need for trained manpower to provide necessary guidance and assist in implementing the correct technologies in the aquaculture and mariculture areas in the country.

He said that the Department of Ocean Development had undertaken the projects relating to Marine Satellite Information Service, Coastal Ocean Monitoring and Prediction System, Sea Level Monitoring and Modelling, National Ocean Information System, Coastal Zone Information and Coastal Ocean Design and Prediction Systems.

Dr Muthunayagam said, "By starting these new courses Andhra University has taken a lead once again in our country to meet the growing needs of manpower in the fast emerging technological area. If

we recall, in India there has been active interest in biological and physical oceanography several years back and the subjects were introduced in the curriculum of the universities and educational institutions after World War II. The Department of Meteorology and Oceanography of Andhra University was the first educational institute in Asia where formal teaching of Marine Science was started. This was followed by the establishment of Central Marine Fisheries Research Institute at Cochin in 1947".

The coastal zone management, he said, was an area of great importance to India. "Here we have a zone of interaction between lithosphere and hydrosphere. The forces prevailing over the land and in the sea interact with each other in the coastal area and have impact both on the land and sea. The actions and reactions are site specific. Based on the existing environment and the requirements, the activities in the coastal zone have to be judiciously planned and executed with appropriate control and regulations. Thus the management of coastal resources and the coastal marine environment are complex. Irrational approach could lead to adverse impacts and depletion of resources as well as imbalance in the coastal and marine bio-diversity. We see the emerging concept of integrated management of our coastal areas for sustainable development. Its basic aim is to establish best, long term, sustainable exploitation of resources in the coastal zone and maintaining the beneficial natural environment", he added.

Dr Gopalakrishna Reddy said Andhra University was laying emphasis on ocean-related studies. The Department of Ocean Development, Government of India, had released Rs 2.15 crore for the establishment of the Centre for Coastal Aquaculture and Marine Biotechnology.

The Vice-Chancellor said that there was heavy rush for undertaking shrimp farming in Andhra Pradesh by a variety of people, most of whom lacked proper knowledge in the management of shrimp farming.

The state government had allocated land to weaker sections of the society, especially fishermen, SC and ST communities in a big way to enable them to undertake shrimp culture. Many shrimp farmers were facing a variety of problems due to lack of knowledge, he added.

Dr Reddy said that there was an urgent need to create awareness among different types of shrimp farmers about various aspects of shrimp farming by providing training and extension service, so that shrimp farming industry could progress on a scientific basis for achieving sustainability.

Under Training and Extension Service, various target groups would be covered. Such target groups were : farmers among weaker sections including fishermen, SC and ST communities, technocrats, unemployed graduates and postgraduates and entrepreneurs, Dr Reddy said.

Seminar on Information Technology

By the turn of the century 60-70 per cent of the labour force would be in the service sector, of which half would be in the IT sector, Dr. B.K. Gairola, Deputy Director of NIC, said in a recent seminar on "Information Technology — Issues and Prospects" held in New Delhi recently. To attract more companies to invest in computer technologies, Mr. N. Vittal, Secretary Department of Electronics proposed to offer 100 per cent depreciation to Indian companies investing in computers and granting them permission to charge 12 per cent interest for leasing computers. Worldwide focus now is on "Information to anybody, anywhere, anytime", said Mr. S. S. Oberoi, Advisor, Computer Development Division at the Department of Electronics (DOE).

Mr Oberoi said computing, telecommunications, consumer electronics and media were all getting integrated to provide an "information superhighway" for education, home banking, stock markets, health care, video conferencing and a variety of other needs. Facilities already available for the information super-highway included telephone, fax, cable television, multimedia, data communication, remote computer access and remote database access facilities, he added.

"If India is to gain supremacy in the field, it should exploit its excellent software potential, upgrade its hardware capabilities and create strong data networks and computer education facilities," experts said at the seminar organised by the Jadavpur Alumni Association.

Software development, which needed skilled manpower was still

largely labour intensive, a factor that India could exploit to have a due share of the multi-billion dollar market, said Dr Gairola. With the need to develop quality software gaining momentum, a large number of Indian software companies now had "ISO" certification that provided a competitive edge in the world market, he added.

A major area that India can exploit is software product development and maintenance. Many foreign companies are finding it more cost-effective to pass on 10-15-year-old software products, which may still have another 5-7 years life, to India for maintenance.

Several foreign firms are also studying how product development can be done in India, both to cut time and to benefit from India's large manpower, he added.

Research and development is yet another area of it which is being passed down to India.

In spite of India's low computer density, vast computer illiteracy, and general phobia of the management and trade unions to introduce computers to improve productivity, it has already made some strides in the software sector, pointed out Mr. Vittal.

Although a lot of manpower is being employed for software development and export, India is not able to build a strong software industry.

Issues that need urgent attention include a strong data communication network, computer education in schools and colleges to generate computer literacy at the grassroot level, which can create a strong base in software development.

The most challenging issue in the field of information technology

in India is diffusion of technology, or making it widely available.

IIT Madras Convocation

"India will need specialists in many advanced fields to chart its course in the liberalised economic scenario, and the centres of excellence like the Indian Institutes of Technology (IITs) have a vital role to play in meeting this demand," said the Union Human Resource Development Minister, Mr. Madhavrao Scindia while addressing the 32nd convocation of the IIT Madras recently. He said with deregulation, competition and opening up of the economy, industry 'had to come out with new product and process development and the IIT graduates would find a ready niche here.

Mr. Scindia said the IITs attracted the best brains. They had to be exposed to the leading edge of technology and prepared by top faculty to face the world. In the fast changing global situation, it should be ensured that there was continuous updating of the education at the IITs for relevance.

Shortage of funds should never be an impediment to this endeavour, the Minister said, promising to consider the request of IIT Madras for a review of its non-plan grant, to bring it on par with other IITs. However, innovative methods had to be found to address the problem of funds generation. The IIT Madras had scored a big success in achieving an annual growth rate of 25 per cent in consultancy and sponsored research. Its international consultancy projects showed that it was capable of delivering quality and frontline technology.

The HRD Ministry was ready to provide a full matching grant for funds generated by the institute

from various sources to create an Endowment Fund. The Finance Ministry had announced tax concessions for donations to the Fund, Mr. Scindia said, appealing to the captains of industry to donate liberally to it.

Those graduating from centres like the IITs should be pace-setters in the task of nation building. The institutes themselves were beacons of hope leading the country into the next century, he said.

Modernism meant improvement in socio-economic standards through diffusion of technological knowledge. India had abundant raw material and unlimited markets. It had traditional skills and understanding. What was needed was a catalyst to convert these assets into productive forces.

Dr. M.S. Swaminathan, Chairman, Board of Governors, said a nation had to value its human resources more than its concrete assets like buildings if it aspired for progress.

There was a migration of 30 to 40 per cent of candidates from the IITs to foreign countries, but it was encouraging that they did not sever their links with the *alma mater*. Moreover, many were coming back to settle in the country especially in the present atmosphere where industry was nurtured.

Referring to the mandate given by Mr. Scindia to develop the IITs further, Dr. Swaminathan said a joint board of faculty was coming out with suggestions for implementation.

The Centre for Industrial Consultancy and Sponsored Research (CISR) of IIT Madras was hoping to extend its reach to other areas by opening centres at Hyderabad, Bangalore and Trivandrum. This would help spread out oppor-

tunities and bring prosperity to new regions.

Prof. N.V.C. Swamy, Director, in his report, said that 790 candidates were graduating at the convocation. Of them, 324 were from B.Tech, 251 M.Tech, 63 M.Sc., 57 M.S. and 95 Ph.D.

Sri Sathya Sai Artificial Intelligence Centre

Sri Sathya Sai Artificial Intelligence (AI) Centre is being set up at Prasanthinilayam Campus of Sri Sathya Sai Institute of Higher Learning at a cost of Rs. 40 lakhs. The prime objective of the centre is to provide research, teaching and training facilities in AI and related areas and also to provide computer support to the ongoing M.Tech and other postgraduate programmes.

The main computing power for the centre is provided by the following four Digital System i.e. DEC 2100 A500MP - SERVER, DEC 3000 300X, DEC 3000 300LX (2 Nos).

DEC 2100 server is one of the most powerful servers with 190 MHz clock speed. The system at the centre has 64 MB memory, 2 GB storage with tape and CD-ROM drives. It can support up to 100 users. With three operating systems and more than 400 application packages ported, it is a pride possession for any lab. The system can be expanded by three times the present capacity to meet any future demands. The cost of the server with present configuration is rupees ten lakhs.

DEC 3000 workstations 300X and 300LX, at a moderate cost, provide very powerful platforms for computationally intensive problem areas like image processing, medical diagnosis, speech recognition, computer graphics, multimedia and the like.

The Software support on these systems includes the three operating systems, namely, DEC OSF/1, OPEN VMS and WINDOWS-NT, and compilers of all the major languages and a host of application packages under CSLG programme.

The power of these systems is made available to all by networking all computers (which is about 50 at present) on the campus to these systems so that any body could log in to these systems and work on them. The centre is set up in a spacious, aesthetically designed and spiritually vibrant lab which is conducive for serious work. The cost of the present first phase is Rs. 25 lakhs. It is proposed to expand this facility further in the second phase.

The on-going projects include: Time table scheduling problem, Telugu Optical Character recognition, Blood Analysis, Sri Sathya Sai Achieves using image, documentation techniques, Sanathana Sarathi Subscription package, and Accommodation package.

ISTE Awards for 1995-96

Nominations have been invited from teachers/students of all Government, Aided and Unaided Institutions for the various ISTE Awards 1995-96. Details regarding each award have been sent to Heads of all Institutions who may be contacted for these details. Last date indicated is the date for receiving nominations. Award details will be sent to individuals only on payment of Rs. 25 per award to be sent as a D.D. drawn on ISTE.

I. National Awards

1. Anna University National Award for 1995 for the Outstanding Academic.

Last date : September 30, 1995

Eligibility : Full time teachers of degree level institutions.

Award consists of a cash prize of Rs. 8,000, a medallion and a citation.

2. Kerala Government Engineering Design National Award for 1995 for Students.

Last date : October 30, 1995

Eligibility : Students Studying for the first degree in any branch of Engineering and Technology.

Award consists of a cash prize (Ist Prize Rs. 2,500, IIInd Prize Rs. 1,500, IIIrd Prize Rs. 1,000), a medallion and a citation.

3. U.P. Government National Award for 1995 for Outstanding Work done in specified areas of Engineering and Technology.

Last date : September 30, 1995

Eligibility : Teachers (including Principal)

One award is given for Engineering College teachers and one award for Polytechnic teachers. Each award consists of a cash prize of Rs. 4,000, a medallion and a citation.

4. Maharashtra State National Award for 1995 for Outstanding Research Work in Engineering and Technology.

Last date : September 30, 1995

Eligibility : Teachers (including Principal/Head of Institution) of Engineering Degree level institutions.

5. ISTE-SGSITS National Award for 1995 for Best Research Work done by Young Teachers (below 35) of Engineering Colleges.

Last date : September 30, 1995

Eligibility : Full time teachers (below 35 years of age) of Engineering Colleges.

Award consists of a cash prize of Rs. 6000, a medallion and a citation.

tion. Award instituted by Shri G.S. Institute of Technology & Science, Indore.

6. ISTE-IPCL National Award for 1996 for Best M.Tech. Thesis in Chemical Engineering.

Last date for registration: January 15, 1996.

Last date for thesis submission: September 30, 1996.

Award consists of a cash prize (Rs. 10,000 1st Prize, Rs. 6,000 IIInd Prize), a medallion and a citation.

7. ISTE-GSFC National Award for 1996 for Best M. Tech. Thesis in Mechanical Engineering.

Last date for registration : January 15, 1996

Last date for thesis submission: September 30, 1996

Award consists of a cash prize (Rs. 10,000 1st prize, Rs. 6,000 IIInd Prize), a medallion and a citation.

8. ISTE-L&T National Award for 1995 for Best M.Tech. Thesis in Electrical/Electronics Engineering.

Last date for registration : January 15, 1996

Last date for thesis submission: September 30, 1996

Award consists of a cash prize (Rs. 12,500 1st Prize, Rs. 7,500 IIInd Prize), a medallion and a citation.

II. Regional Awards

1. Best Polytechnic Teacher Award for 1995 (State Level). States covered: Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra and Uttar Pradesh.

Last date : September 30, 1995

Eligibility : Full time teachers of Polytechnics.

Award consists of a cash prize of Rs. 2000 (Rs. 3000 for Maharashtra State), a medallion and a citation.

2. Best Engineering College Teachers Award for 1995 for

Maharashtra State.

Last date : October 15, 1995

Eligibility : Full time teachers of the rank of Professor or below.

Award consists of a cash prize of Rs. 3000, a medallion and a citation.

3. ISTE-Narsee Monjee award for 1995 for Polytechnics having Best Overall Performance. Award instituted by the Narsee Monjee Education Trust, Bombay.

Last date : October 15, 1995

Eligibility : Polytechnics of Maharashtra.

Award consists of a Plaque and a Certificate.

4. ISTE-Narsee Monjee Award for 1995 for Best Project Work done by polytechnic students in Maharashtra State.

Last date : October 15, 1995

Award consists of a cash prize (1st prize Rs. 2,500, IIInd prize Rs. 1,500), a medallion and a certificate.

World Council Creativity Award

Prof. M.K. Raina, Head of the Department of Educational Psychology, Counselling and Guidance at the National Council of Educational Research and Training, has been selected for the first World Council Creativity Award.

The award — instituted by the World Council for Gifted and Talented Children — was presented at the 11th world conference of Gifted and Talented Children held in Hong Kong on July 31.

Prof. Raina — a senior fellow of the Indian Council of Social Science Research — is also the recipient of the 1985 V.K.R.V. Rao Award in Psychology.

JNU Silver Memoir

A group of students have come together to form Jawaharlal Nehru University Silver Memoir Committee (JNUSMC) to engage students, teachers and members of the non-teaching staff, in a critical analysis of JNU as an example of the university system in India and in the broader canvas of the Third World. The objective of the JNUSMC is to collect papers and articles of JNUites' and publish them as an anthology covering the following areas:

Section A: JNU — An Introduction

Section B: History, Culture and Traditions of JNU

- i) Major national/international events and the University community.
- ii) Evolution of administrative policies.
- iii) Major shifts in community life in JNU.
- iv) Inside a national village: major incidents in the JNU campus.

Section C: Spread of JNU

- i) Positing a national agenda of social thought
- ii) Linkages with academic set-ups all over the country and abroad.
- iii) JNUites in national politics.
- iv) Meeting challenges in the fields of science, literature, media, bureaucracy and social work.

Section D: Critical Evaluation

- i) Changing contours of the faculty
- ii) JNU students: expanding definitions
- iii) Research-orientations: a cosmology in search of direction
- iv) JNU staff: the non-teaching enclaves

Section E: Reminiscences

- i) Debates and seminars
- ii) Student politics

- iii) Examinations
- iv) Teachers
- v) Students
- vi) Tours and field-studies
- vii) Romance
- viii) Hostel life

Section F: Future Prospects

- i) A blueprint for resurgence

The JNUSMC appeals to the JNU, community to contribute to the proposed anthology. Contributions should reach the JNUSMC before the 30th of September 1995. The articles, preferably within the limit of 2500 words, be mailed to JNU Silver Jubilee Memoir Committee, Post Bag No. 18, JNU, New Delhi - 110 067.

Brain Drain or Brain Investment?

Mr. Pranab Mukherjee, External Affairs Minister, said that brain drain from the country was, in fact, 'brain investment' which would

fetch returns in the future. He was addressing the convocation of Vinoba Bhave University in Hazaribagh (Bihar) recently. He said the best students from Indian universities compared well with the best in the world. "One study has shown that nearly 75 per cent of IIM (institute of management) graduates have been absorbed by prestigious multinational companies, many from the campus itself", he added.

Mr. Mukherjee said the countries which had become developed in the last two decades had a common characteristic feature — availability of mass quality education. However, referring to the long and old tradition of universities like Taxila, Nalanda, Vikramshila and Kanchi, he regretted that modern Indian universities had been unable to regain their glory and magnificence.

News from Agricultural Universities

Refresher Course in Agronomy

The three-week Refresher Course on "Recent Advances in Agronomy" was recently concluded at the Chaudhary Charan Singh Haryana Agricultural University (CCSAU). Convened by the Academy of Agricultural Research and Educational Management (AAREM) of the University, the course was attended by thirty participants from all over India.

Speaking at the valedictory function, Dr. K.B. Raman, Member, Agricultural Scientists Recruitment Board (ASRB) said that in view of the changing agricultural scenario it had become imperative on the part of agricultural universities that their faculty members and students were given orientation and

training in transfer of technology in emerging areas as it would enable them in building professional competence, self-confidence and managerial abilities. He said that agricultural policy planners, administrators, teachers and scientists should discuss the recent changes in the teaching pattern over a common platform and suggest innovations in the curriculum so that effective teaching did not become a casualty in the educational institutions.

Dr. V.P. Singh, Director of Research, CCSAU, who presided, said that each agronomical practice had its own role in increasing production. In the past, major gains on the agricultural front had been

achieved from irrigated areas. Now the time had come when the agricultural scientists are motivated to concentrate on barren and dryland areas so that sustainable agriculture is developed, he added.

Dr. I.J. Singh, Director, Academy of Agricultural Research and Educational Management (AAR-EM) said that during this course, the participants were acquainted with the newer areas of agronomical advances through lectures, audio-visual aids and field visits. He said that the Academy had so far conducted three national and several regional level training courses for the development of human resources in agricultural universities.

Resource Centre for Farmers' Rights

"Patenting itself is a discipline with many intricacies and unless our farmers and scientists are thorough with various provisions of patenting, India will be left behind in the new world trade regimen," said Mr. Madhavrao Scindia, Union Minister for Human Resource Development. He said country had the largest agriculture field laboratories in the world comparable to the United States. If we did not use it there was a danger of other developed nations using this and taking away the patents for some of the processes which were really inherent to the Indian system. Mr. Scindia made these observations while dedicating the Resource Centre for Farmers' Rights at the M.S. Swaminathan Research Foundation in Madras recently.

The Minister said the country need not have any apprehension over the new world trade arrangement which, he said could gravitate in India's favour. If India was

quick to understand the ramifications of new trade order and take advantage of it through technical capability, it was possible to discover new frontiers in disciplines like genetics. There was every prospect for the country to become a leader in research activities, in evolving new technologies and in new genetic discoveries. The country should look forward with confidence and enthusiasm rather than apprehension. The fear of some people over the new world trade order had no basis as the country had the best technology and ability to overcome it, he added.

The State Agriculture Minister, Mr. K. P. Krishnan, who presided, said it was the duty of the country to protect the age-old seed processing methods, which were being practised by farmers. With this in mind the state government had launched a nine-point agricultural development programme "Magarasi 2000 — vision, path and dimension" last year. One of its programmes was seed patenting and conserving bio-diversity. He announced a grant of Rs. 12 lakhs to the foundation on behalf of the Tamil Nadu Government and

handed over a cheque for Rs. 2.61 lakhs as first instalment.

Dr. M.S. Swaminathan, in his welcome address, said the benefits and fruits of modern biotechnology should also go to those who had conserved the genetic materials. Unfortunately they remained poor while those who developed the genetic materials with modern technology had become rich. This kind of gross inequity in sharing the benefits was first pointed out by the Food and Agriculture Organisation and one of the purposes of the centre was to protect the rights of farmers and the tribal women.

Already the Union Government had formulated legislation for plant variety and plant protection, which was to become an Act soon. One of the provisions of the legislation was to recognise and reward rural and tribal women for conserving genetic resources. But the provisions of the bill would remain on paper unless the scientists developed a database of intellectual contribution of these people and protect them from being patented by others. This was their social responsibility, he added.

News from UGC

Countrywide Classroom Programme

Between 24th August to 31st August, 1995, the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The Programme is presented in two sets of one hour duration each every day from 6.00 a.m. to 7.00 a.m. and 1.00 p.m. to 2.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

6.00 a.m. to 7.00 a.m.

24.8.95

"Microwave Antenna - Part II"

"Rainfall and Water Resources - Part II"

"English Romantic Poetry - Part III"

26.8.95

"Mathe - majik"
"Elements of Marketing"
"Environmental Engineering : Secondary Waste Water"

27.8.95

"Career Counselling : Travel and Tourism"
"Four Great Inventions of Ancient China"
"The Week Ahead"

29.8.95

"Bulk Crystal Growth from Melt"
"Lichens"
"Effect of UV Radiations on Human Skin"

31.8.95

"Fibre Connectors and Splices"
"Coal - Part I : The Captive Sun"
"The Literary Biography"
"Ind Transmission
1.00 p.m. to 2.00 p.m.

24.8.95

"Searching the Frontiers - Part III : The Wonder Wire"
"Exploration of Atomic Minerals - Part I"
"Glorious Past, Uncertain Future"

25.8.95

"Starfinder : Discoveries with the Hubble Space Telescope - Part IV : The Expanding Universe"
"Preserving the Past - Part I"
"Water, Water Everywhere"

26.8.95

"The Dawn After - Part III"
"New Vistas in Carnatic Music"
"Aerobics"

27.8.95

No Telecast

28.8.95

"The Week Ahead"
"Through Business Communication"

"Anar (Pomegranate)"

29.8.95

"Issues in Higher Education - Part V"
"Anaesthesia"

30.8.95

"The Art of Screen Printing"
"History of Indian Coinage - Part I : Coinage Emerges"
"Molecular Biology - Part II : The Search Continues"

31.8.95

"Searching the Frontiers - Part IV : The Sol. Gel Process"

"Exploration of Atomic Minerals - Part II"

"Ayurveda Medicine"

Hindi Telecast

प्रातः 6.00 से 6.30 बजे तक

25.8.95

"दो तीन नियम - भाग 3"
"भारतीय रंगमंच"

28.8.95

"राग संगीत - भाग 5 : बागेश्वी"

30.8.95

"राग संगीत - भाग 6 : विहाग"

News from Abroad

Conference on Feminist Methodology

Praxis Nexus, Canada, proposes to organise a Conference on Feminist Methodology, Theory and Community on 18-20 January, 1996 in Victoria, British Columbia, Canada. The topics proposed to be discussed at the conference include (1) Being in the community as a scholar/activists/activist-scholars; (2) Successful projects/failed attempts; (3) Theoretical implications of a changing feminist praxis; (4) Methodological frontiers and cautions; (5) Solidarity in praxis; (6)

Legitimation of subjugated knowledges; (7) Research design; and (8) Epistemological advances and the implications for praxis.

Keynote speakers in the conference are renowned feminist-scholars Maria Mies and Vandana Shiva. Further details may be obtained from Praxis Nexus, c/o Pamela Moss, Department of Geography, University of Victoria, P.O. Box 3050, Victoria BC, Canada V8N 3P5.

Institute for Research in Medical Statistics (INDIAN COUNCIL OF MEDICAL RESEARCH)

APPOINTMENTS

Applications for one post of **Coding Clerk** in the ST Category in the pay scale of Rs. 1200-30-1560-EB-2040 are invited upto 31.8.1995 in the Institute for Research in Medical Statistics, (ICMR) Ansari Nagar, New Delhi.

Qualification & Experience : Bachelor's Degree (Statistics, Maths, Economics as one of subjects) with one year experience of Coding. **Desirable:** Knowledge of work on Personal Computer.

Age: 25 years (upper age limit relaxable by 5 years in case of ST Candidates).

Allowances as per Central Government are admissible on the above pay scales. Benefits of pension admissible.

Applications from the employees working in Central/State Govt. Deptt./ Public Sector undertaking must be forwarded through proper channel.

An Important Contribution

T.S. Devadoss*

Susan Visvanathan. Missionary Styles and the Problem of Dialogue. [Socio-Religious Movements and Cultural Networks in Indian Civilisation, Occasional Paper 6]. Shimla, Indian Institute of Advanced Studies, 1993. Pp. 26. Rs. 25/-

Susan Visvanathan's study focuses on the "Missionary Styles and the Problem of Dialogue". Efforts are made to show how there have been various missionary approaches towards evangelization which in fact intensified the prospectus and problem of dialogue.

First, as regards the context of the paper, ours is indeed an age of dialogue. In this area, there are several problems which are central: how should we understand the multiplicity of cultures, the diversity of philosophies, and the many religions? Is cross-cultural life possible? How can one, remaining faithful to his/her own tradition, still relate and live with the other? Can one be a missionary without however attempting to "Convert" the other to his religion or way of life? To these questions, this monograph may perhaps offer some possible answers.

The study unfolds in three parts. The first part seeks to discern the various motives behind the missionary activity. The second part highlights the nuances of the relationship between native and missionary. The final part, by throwing light on the life and activity of Dom Henri Le Sioux, a French Dominican monk, points to the possi-

bility of an entirely new and different missionary presence.

The author rightly captures the changed attitude of the missionaries from Paternalism and accommodation to hierarchizing and control. Sure, the sincere efforts of the missionaries to educate and improve the lot of the natives can never be in doubt. Yet, one could also discern the ulterior and imperialistic military fervour behind such missionary endeavours. But in any case this cannot be over-emphasized as the author seems to do. She could have highlighted the more positive aspects of missionary presence and work.

The second part of the monograph chronicles the manner in which Christianity and Hinduism converse in the problematic web of conversion. Here the life of Krishna Pillai is taken as a case in point. Krishna Pillai's story shows "how to look at dialogue between religions as a problem of consonance

and dissent, of turbulence in faith and given precepts of life, of ultimate questioning, often without resolution". (p. 10). Can a native Christian continue to live as a Christian among his own people? The prospects seem to be not so bright. The author shows how Krishna Pillai's life was tossed between his own Vaishnavaite tradition and his new-found Christian faith. The question is: can one live both the religious worlds simultaneously without experiencing any alienation?

In this context the author has done well in choosing to present the case of Dom Henri Le Sioux, a French Dominican missionary, whose life is in striking contrast to the earlier missionary presence. The author presents him to have had a mystic experience that broke down the doctrinal exclusiveness between Hinduism and Christianity. The manner in which this missionary sought to do this was a life time experiment, a voyage, singularly lovely and yet full of laughter, mistakes and friendship.

Dialogue is no more a theoretical enterprise. It has become the very life of the people. It is to this difficult but crucial area that this short monograph of Susan Visvanathan is an important contribution.

UNIVERSITY GRANTS COMMISSION BAHADURSHAH ZAFAR MARG NEW DELHI - 110 002

The University Grants Commission invites applications for two posts of Junior Statistical Officer (one General and one reserved for Scheduled Caste) in the scale of pay of Rs. 2200-4000 plus usual allowances as admissible to the Central Govt. servants. The age limit is 40 years (relaxable by five years for employees of Central and State Governments, Universities and autonomous bodies). The incumbents selected for the post are liable to be posted anywhere in the country.

For details please refer "The Employment News" dated 12.8.1995.

davp 823(3)95

*Director, Radhakrishnan Institute for Advanced Study in Philosophy, University of Madras, Madras-600 005.

COMMUNICATION

What Ails Our Education

Education in India is at cross-roads. It has failed to achieve the desired objective of educating the youth to be good citizens. Things are moving from bad to worse and the prevailing situation is alarming and needs attention of all concerned.

If we analyse who all are responsible for such a mess, the politicians come first. The youth are immature and prone to allurement. Consequently, every political party tries to woo the youth of the age cohort 18 - 25 years. The lowering of voting age from 21 to 18 years has worked as a catalytic agent in politicizing the atmosphere in colleges and universities. Education is the last priority of our politicians in power, while it should be the first as today's youth would be running affairs of the country tomorrow. Indiscipline and unethical politics has created the impression in the minds of our youth that political power can only be achieved by corrupt and anti-social practices.

A new education policy was formulated in 1986 stressing distance and adult education. 10+2+3 system was introduced in all states and Socially Useful Productive Work (SUPW) was made compulsory at 10+2 level. But the policy has not delivered the desired results due to lack of interest and will on the part of our bureaucrats and educational administrators.

The next category which is responsible is teachers and educational administrators. Many teachers in colleges and universities indulge in dirty politics and do not have any interest in academic pursuits. They have failed to provide right leadership to the students who are instead instigated by them

to meet their own narrow ends. In colleges, the teachers have classes hardly for 70 or 80 days in an academic year and even half of the prescribed syllabus is not covered. Consequently, students engage them for tuition. The teachers not only take private tuitions but undertake other business activities during duty hours. They have least interest in maintaining discipline and promoting co-curricular activities of the students. They also help their favourite students in copying during examinations. Can we expect honesty, sincerity and academic excellence from a student who takes pride in copying and using unfair means in examinations?

Educational administrators are appointed these days more on the basis of their political affiliation than their ability in administration. Such administrators do not command respect and influence among the teachers and students.

They follow a policy of appeasement and flout rules to keep their chairs intact. Youth programmes like NSS, NCC, mountaineering, sports etc suffer due to the indifferent attitude of teachers and administrators. Students' unions are also not functioning in conformity with the aims and objectives for which these were created. Students are more interested to get the colleges and universities closed on one pretext or the other. It is in our country only where students pay without getting any return.

It is high time the government takes some remedial steps to check the present trend and evolve a new education policy which can curb the above mentioned tendencies and practices. If timely action is not taken, one can visualize what would be the future of our country?

D.S. Hooda,
Professor of Mathematics,
CCS Haryana Agril. University,
Hisar-125 004.

Concept

PUBLIC POLICY ANALYSIS AND DESIGN

Vivek K. Agnihotri I.A.S.

Foreword by Prof. A.M. Khusro

484 pp.	(561-2)	Hardbound	Rs. 700
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A Seminar on Public Policy Analysis and Design was organised by LBS National Academy of Administration, Mussoorie in the context of the increasing concern for public policy. The volume includes the papers presented at the Seminar and explores the themes of Sectoral Policies and Methodologies providing a wide coverage of public policy issues from different perspective.

V.K. Agnihotri is Joint Director and Coordinator of Public Administration Faculty at LBS National Academy of Administration, Mussoorie.

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THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

BIOLOGICAL SCIENCES

Biology

1. Nasser, A K V. **Studies on tuna baitfishes of Lakshadweep.** CUST. Dr P S B R James, Director (Formerly), Central Marine Fisheries Research Institute, Kochi.

Biochemistry

1. Glri, Ashok Prabhakar. **Role of proteinaceous inhibitors of pigeonpea in insect pest resistance.** Marathwada. Dr M S Kachole, Lecturer, Department of Biochemistry, Dr Babasaheb Ambedkar Marathwada University, Aurangabad

2. Naryani, Nishi. **Phytomacrobenthos of lower lake, Bhopal.** Barkatullah. Dr S Salman, Department of Limnology, Barkatullah Vishwavidyalaya, Bhopal.

3. Pandhariparker, Swati R. **Some biochemical studies on tryptophan metabolism in animal tissues.** Nagpur. Dr N V Shastri, Department of Biochemistry, Nagpur University, Nagpur.

Biotechnology

1. Vankajah, Betapudi. **Enzymes of starch metabolism in jowar, *Sorghum vulgare*.** Devi Ahilya. Dr Anil Kumar, Department of Biotechnology, Devi Ahilya Vishwavidyalaya, Indore.

Botany

1. Anitha, S. **Geometrical analysis of morphological characters with reference to certain known medicinal species.** Calicut. Dr K Pavithran, Department of Botany, University of Calicut, Calicut.

2. Bibha Kumari. **Ecological study of *Ginkgo biloba* Cass from Biharsharif Nalanda.** Magadh. Dr D D Pandey, Reader, Department of Botany, S P M College, Udaipur.

3. Krishnamachary, Balaji. **Laticiferous plants as a source of rubber and hydrocarbon: *In vivo* and *in vitro* studies.** Patel. Prof J A Inamdar.

4. Mali, Bhagwan Shanker. **Physiological studies on salt tolerance of forage halophytes.** Bhavnagar. Dr A J Joshi, Reader, Department of Life Sciences, Bhavnagar University, Bhavnagar.

5. Maya, C. **Utilisation of plants and plant products for monitoring seed and seed borne diseases of some crop plants.** Bangalore. Dr R K Somashekar, Department of Botany, Bangalore University, Bangalore.

6. Naik, Shamala S. **Mechanism of male sterility in tobacco.** Karnatak. Dr R R Hegde, Department of Botany, Karnatak University, Dharwad.

7. Rema Shree, A B. **Ontogeny and experiments on normal and abnormal cambial activity in *Doxantha unguis-cati* L.** Calicut. Dr K Unnikrishnan, Department of Botany, University of Calicut, Calicut.

Agriculture

1. Anchal Kumar. **Development of an expert system for optimal utilisation of water resources.** PAU.

2. Chetri, Dipok. **Agronomic manipulation for increasing efficiency of stored rain-water in maize-wheat cropping sequence.** HP Krishi. Dr K Bassi, Department of Agronomy, College of Agriculture, Palampur.

3. Develash, Rakesh Kumar. **Epidemiology and management of downy mildew of onion.** HP Krishi. Dr S K Gupta, Department of Plant Pathology, College of Agriculture, Palampur.

4. Gupta, Bodh Raj. **Biology and management of *Alternaria triticina* and *Helminthosporium sativum* affecting wheat.** Sher-e-Kashmir.

5. Kanwaljeet Kaur. **Ecology of fungi of wheat straw residue - its decomposition in soil and its influence on soil myco-flora.** PAU.

6. Kaul, Raj Kumari. **Processing and storage studies on lime, lemon and grapefruit juice concentrates.** PAU.

7. Madan Mohan. **Comparative response of some temperate fruits to foliar application of urea.** Y S Parmar. Dr R P Awasthi, Director of Research, Dr Y S Parmar University of Horticulture and Forestry, Solan.

8. Mohan Singh. **Genetic analysis of some quality traits in durum wheat, *Triticum durum* Desf.** PAU.

9. Satish Kumar. **Evaluation of rock phosphate as a direct source of phosphatic fertilizer for apple crop.** Y S Parmar. Dr A R Bhandari, Department of Soil Science, College of Forestry, Nauni, Solan.

10. Sofi, Abdul Majid. **Estimation of gene action and combining ability through line x tester analysis in bivoltine silkworm, *Bombyx mori* L.** Sher-e-Kashmir.

Zoology

1. Anantha Samwarna Rao, M. **Alternate-day dietary restriction mediated changes in energy metabolism in aging brain of male balb-c mice.** Osmania. Dr K Shankaraiah, Post-graduate College of Science, Saifabad, Hyderabad.

2. Chamundeswari, P. **Comparative study of uzifly, *Exorista sorbillans* Wiedemann infested silkworm, *Bombyx mori* Linnaeus in two pure races and their hybrid.** Krishnadevaraya. Prof K Radhakrishnaiah, Department of Zoology, Sri Krishnadevaraya University, Anantapur.

3. Manju, P V. **Some aspects of biology of feeding of the Indian bull frog, *Rana tigrina* Daudin.** Osmania. Dr K Shankaraiah, Postgraduate College of Science, Saifabad, Hyderabad.

4. Muraliah, M. On some aspects of post-helminth infection physiological changes in *Channa punctatus*. Kakatiya. Dr G Raghu Ramulu, Department of Zoology, Kakatiya University, Warangal.

5. Muralidhar, P. Study of the biology and life history of *Howickia amygdalis* N SP (Nematoda) from the host house dung fly (Empididae: Diptera) its pathogeneity to host and potential as a biological control agent. Osmania. Dr Y Narsi Reddy, Department of Zoology, Osmania University, Hyderabad.

6. Murhar, Rohini Bhalchandra. Studies on chronobi-rhythms in human subjects. Nagpur. Dr (Mrs) S A Bhide, Reader, Department of Zoology, Institute of Science, Nagpur.

7. Shailaja, S. Flight parameters of singing cicada. Kakatiya. Dr N Chari, Prof (Retd), Department of Zoology, Kakatiya University, Warangal.

8. Sharadamma, A N. Studies on histophysiological and histopathological changes due to parasitic infection in some edible fresh water fishes. Kakatiya. Dr P Dayakar, Department of Zoology, Kakatiya University, Warangal.

9. Sharma, Neelima. Screening of indigenous plants pertaining to juvenile hormone activity against mosquito vector. Barkatullah. Dr C L Sharma, SSL Jain College, Vidisha.

10. Tiwari, Archana. Study of certain plant alkaloids on biological activity of some insect pests. Barkatullah. Dr R C Saxena, SSL Jain College, Vidisha.

11. Venkata Rajashekhar, A. Biology of *Resinomermis narayani* N SP from *Culex* sp. mosquito larvae and *Howickia segnata* N SP from the host *Monolepta segnata* (Coleoptera) and their potential as biological control agents and their pathogeneity to the hosts. Osmania. Dr Y Narsi Reddy, Prof, Department of Zoology, Osmania University, Hyderabad.

12. Venkatesh, R. Alternate-day dietary restriction mediated changes in protein and nitrogen metabolism in aging brain of male balb/c mice. Osmania. Dr K Shankaraiah, P G College of Science, Saifabad, Hyderabad.

13. Wadekar, Kunda Vasant. Studies on the development of lymphoid tissue and the development of the pattern of the hypothalamus in human foetuses. Nagpur. Dr (Mrs) S A Bhide and Dr (Mrs) V M Sapkal, Department of Zoology, Institute of Science, Nagpur.

Medical Sciences

1. Bodla, Rameah Babu. Biotechnological investigations for *in-vitro* production of pharmaceuticals in tissue cultures of higher plants. Kakatiya. Dr C K Kokate, Department of Pharmacy, Kakatiya University, Warangal.
2. Jaison, P L. Mammalian galactose-binding proteins: Studies on human and bovine grey matter glycoproteins recognized by endogenous galactose binding lectin and by human serum anti- α galactosidase antibody. Chitra Tirunal.
3. Joshi, P D. Role of manas (Payche) in the vitiation of agni and its management with sattvavajaya with special reference to hypnotherapy. Gujarat Ayurved. Dr Gurdip Singh.
4. Nirmal, A B. *Kespat ke sandarbh mein swasth yaraksha evam aturvikarprashaman sambandhit katipaya ayurvediye sindhante ke prayogik adhyayan*. Gujarat Ayurved. Dr B M Nirmal.
5. Rao, A R. Screening of certain indigenous drugs for immunogenicity in experimental animals and evaluating their role in *vyadhiksamanya* status of children. Gujarat Ayurved. Dr H S Sharma.
6. Rathore, Amarsingh. Standardisation of valkranta bhasma in relation to its identification, experimental studies and clinical observation. Gujarat Ayurved. Dr H S Sharma.

Veterinary Sciences

1. Prabhakar Pillai, S. Essential aminoacids requirement of the juvenile Indian white shrimp, *Penaeus indicus* H Milne Edwards. TN Vet. Dr R Ramanathan, Prof, Department of Aquaculture, Fisheries College and Research Institute, Tuticorin.
2. Vinod Kumar. Embryo production and endocrine changes in superovulated buffaloes. PAU.

EDUCATION NEWS INDEX

A list of select articles and editorials on education from newspapers received in the AIU Library during July 1995

EDUCATIONAL PSYCHOLOGY

Bhagat, Chetan. The IIM interview. The Pioneer 9.7.95.

Kemal, Asima. Bullying in schools. The Hindu 11.7.95.

Khetal, Harvinder and others. Young stars in the academic firmament. The Tribune 24.7.95.

Murahi, Anju. Playway system encourages initiative and freedom in children : Learn through fun and games. The Telegraph 17.7.95.

Narsamambla, K V S L. Story telling and listening. The Hindu 18.7.95.

Nurden, Robert. Take a break. The Hindustan Times 22.7.95.

Sanghvi, Vijay. A long way from reality. Indian Express 2.7.95.

Selvarajah, Sharmin. Learning through experience. The Hindu 4.7.95.

EDUCATIONAL SOCIOLOGY

REACHING OUT to minorities (Editorial). *National Herald* 27.7.95.

Singh, Preeti. Education and social needs. *Deccan Chronicle* 20.7.95.

EDUCATIONAL POLICY & PLANNING

Ahmed, Tabassum. Education still a low priority. *Patriot* 31.7.95.

Amrik Singh. Policies to programmes. *Deccan Herald* 16.7.95.

A BETTER deal for education? (Editorial). *The Hindu* 27.7.95.

Das, Deepa. Assam launches VEC formation drive. *The Assam Tribune* 11.7.95.

Hegde, B M. Time to re-orient education policy. *The Hindu* 18.7.95.

Jain, Kusum. Prepare the right menu. *The Pioneer* 18.7.95.

SCINDIA'S LARGESSE (Editorial). *The Assam Tribune* 30.7.95.

Singh, Preeti. MHRD move fails to inspire. *National Herald* 19.7.95.

TEACH ME not (Editorial). *The Telegraph* 28.7.95.

EDUCATIONAL ADMINISTRATION

Agrawal, Anand. Karma of admissions. *The Hindustan Times* 12.7.95.

Dua, M R. Varsity-industry interface needed. *The Hindustan Times* 18.7.95.

EDUCATING THE stricken (Editorial). *Deccan Herald* 17.7.95.

Goswami, Pradyut Kumar. Approach to higher education. *The Assam Tribune* 26.7.95.

HAVE A heart (Editorial). *The Statesman* 26.7.95.

Kapoor, Aditi. VC feels powerless in lecturers' selection. *The Times of India* 27.7.95.

Narayan, Hemendra. How not to run a college. *The Statesman* 3.7.95.

Natesan, D. Will BMPC click? *Deccan Chronicle* 2.7.95.

REMOVE THE pinpricks (Editorial). *The Hindu* 8.7.95.

Sharma, G S. The Education Act. *Deccan Herald* 2.7.95.

Sharma, Y K. NAAC's 'undemocratic' agenda. *Patriot* 21.7.95.

Shenoy, G K. Affiliation or accreditation? *The Hindu* 25.7.95.

Siva Kumar, Revathi and Anuradha, R. Who will discipline our educators? *Deccan Herald* 8.7.95.

Sivadasan Pillai, K. Extension: Third dimension of higher studies. *The Hindu* 4.7.95.

STAFF WELFARE (Editorial). *Deccan Herald* 29.7.95.

Vishnu, Y. Autonomous colleges: Myths and realities. *The Hindu* 18.7.95.

Warrier, B S. Deemed to be varsities. *The Hindu* 18.7.95.

EDUCATION & POLITICS

COLLEGES OF Calcutta (Editorial). *Patriot* 29.7.95.

THE BE(A)ST in Basu (Editorial). *The Statesman* 3.7.95.

INNOVATIONS & REFORMS

Ramakrishna Rao, K. Reforms in Andhra Pradesh schools. *The Hindu* 18.7.95.

Sikhamani, Vijaya. Educational reforms must be revolutionary. *Deccan Chronicle* 2.7.95.

CURRICULUM

Bhargava, S C. Making education meaningful. *Deccan Chronicle* 23.7.95.

Ramanathan, Gayatri. Who's afraid of sex ed? *The Times of India* 29.7.95.

Sharma, Geeta. Schools to teach human rights. *The Telegraph* 24.7.95.

Shrivastava, Girish. Vocationalisation: Brass tacks before education. *The Hindustan Times* 25.7.95.

LANGUAGE & LANGUAGE POLICY

Ravikanth Reddy, R. Raw deal for Telugu. *Deccan Chronicle* 10.7.95.

Ray, Baren. The language issue. *The Hindu* 26.7.95.

Sharma, Anju. English in anguish. *The Hindustan Times* 22.7.95.

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Dhawan, Sunil K. Scientists and their aspirations. *The Hindustan Times* 4.7.95.

Krishna Kumar. Remembering earthworms: Orthodoxies of science education. *The Times of India* 31.7.95.

Padhi, B K. Going into science. *The Statesman* 21.7.95.

Panneerselvam, A. Socialising science. *The Hindu* 11.7.95.

TECHNOLOGY DEVELOPMENT missions (Editorial). *National Herald* 29.7.95.

Valluri, S R. Ethics in science: Moses to the rescue. *The Economic Times* 15.7.95.

Vombatkere, S G. Decentralisation in science & technology. *The Hindustan Times* 25.7.95.

VOCATIONAL EDUCATION

Ananthakrishnan, Lalitha. The what and why of it. *The Hindu* 21.7.95.

Bakshi, D C. IAF's education veterans. *National Herald* 19.7.95.

Bhaskara Reddy, D. De-urbanising medical colleges. *Deccan Chronicle* 30.7.95.

D'Souza, Lajwanti. Computer education shops make a killing. *The Times of India* 16.7.95.

Elbote, Anil. B Arch admissions not fair. *Deccan Chronicle* 24.7.95.

FORUM FOR interaction (Editorial). *The Hindu* 21.7.95.

Jose, Raphel. Fashionable way to success. *The Pioneer* 4.7.95.

Kapoor, Aditi. On campus : Students rush in for career-oriented courses. *The Times of India* 21.7.95.

Mitra, Sugata. 'Computer courses are seen as an alternative to engineering'. *The Pioneer* 4.7.95

Narayan, Subhashini. WB makes classes optional, students relieved : Vocational studies fail to further career. *The Telegraph* 3.7.95.

Narayanan, V N. School versus education. *The Hindustan Times* 16.7.95.

Rajagopalan, T. The indispensable companions. *The Hindu* 21.7.95.

Ravikanth Reddy, R. Why MBPC in intermediate? *Deccan Chronicle* 17.7.95.

Vedantam, Vatsala. When professional study is not planned: Learning sans direction. *Deccan Herald* 22.7.95.

DISTANCE EDUCATION

Kuppuswamy Rao, K. Teaching science through open varsities. *Deccan Chronicle* 3.7.95.

TEACHERS & TEACHING

Ahmed, Firoz Bakht. Educating teachers important. *The Pioneer* 18.7.95.

Amrik Singh. New entrants to teaching. *The Hindu* 7.7.95.

Bari, S A. Devaluation of professorship. *National Herald* 4.7.95.

COUNSELLING & GUIDANCE

Goyal, R A. Students lack proper guidance. *The Pioneer* 4.7.95.

EDUCATIONAL RESEARCH

Bhat, Vishweshwar. Doctorates or 'quack' torates? *Deccan Herald* 30.7.95.

Bhattacharya, Anirudh. CSIR : Striving for a global R&D gameplan. *The Pioneer* 4.7.95.

Hasan Suroor. In the name of research. *The Hindu* 4.7.95.

EDUCATIONAL TECHNOLOGY

Ganesan, S. Dawn of the end-user era. *The Hindu* 21.7.95.

Shukla, Rajiv. Computerisation to meet the challenge. *The Hindustan Times* 18.7.95.

Sood, B R. Computer-aided instruction. *The Tribune* 20.7.95.

EDUCATIONAL EVALUATION

Bariana, Sanjiv Singh. Failed? : Keep your options open. *The Tribune* 3.7.95.

Bhatt, Kiran. A teacher's viewpoint. *The Hindustan Times* 22.7.95.

Bhattacharjee, Jyotsna. Educational hazards. *The Assam Tribune* 20.7.95

Dayak, Meenaxi. National talent search reassessed. *Deccan Herald* 30.7.95.

Dua, M R. Education vs employment. *Deccan Herald* 23.7.95.

Dutt, G K. Of plush jobs and fat salaries. *Deccan Herald* 21.7.95.

Gajraj, K M. Examination anomalies. *Deccan Herald* 23.7.95.

Indiresan, P V. Quality education for all. *The Hindu* 28.7.95.

Jain, Kusum. CBSE examination system : Call for change — Betrayal of trust. *The Hindustan Times* 12.7.95.

Maheshwari, Ankit. CBSE examination system : Call for change — Blame lies elsewhere. *The Hindustan Times* 12.7.95.

Mukherjee, Mita. Private tuitions responsible for falling standards : WB lags in competitive exams. *The Telegraph* 10.7.95.

Randhawa, S S. Money buys higher education. *The Tribune* 3.7.95.

Venkataratnam, M. Critical review of the UPSC engineering services examination. *The Hindu* 25.7.95.

ECONOMICS OF EDUCATION

Bagchi, Amiya Kumar. Trade in bachelors. *The Telegraph* 28.7.95.

Bhat, Vishweshwar. Brain drain in the backyard. *Deccan Herald* 9.7.95.

Biswal, Kamalika. They labour in vain. *The Hindustan Times* 11.7.95.

Chakrabarti, Sreemati. Funding higher education. *The Hindustan Times* 2.7.95.

Datta, Amlan. Unemployment - II : Risk of great harm to society. *The Statesman* 6.7.95.

Datta, Amlan. Unemployment - III : Operation must start from base. *The Statesman* 7.7.95.

Dharma Kumar. Re-educating the educators. *Indian Express* 16.7.95.

Easwara Reddi, A. A job for every Indian. *Deccan Chronicle* 22.7.95.

GIVE EDUCATION priority (Editorial). *The Pioneer* 26.7.95.

Indiresan, P V. Planned disparity in educational wealth. **The Economic Times** 13.7.95.

Kapoor, Adit. DU colleges hard put to foot salary bill. **The Times of India** 11.7.95.

Prabhjot Singh. Brain drain PGI's bane. **The Tribune** 11.7.95.

PRIVATISE, BUT slowly (Editorial). **The Hindustan Times** 26.7.95.

Rammanohar Reddy, C. Reforms, jobs and unemployment. **The Hindu** 17.7.95.

Sharma, G D. Create a job-winning resume. **The Hindustan Times** 25.7.95.

LIBRARIES & BOOKS

Chopra, Ashok. The printed word is still flourishing. **The Tribune** 2.7.95.

Hashmi, Syed Ali. Public libraries and polls. **The Hindu** 25.7.95.

Kalita, Rabin. Documentation work in the museums. **The Assam Tribune** 28.7.95.

Prahallada, N N. On libraries. **Deccan Herald** 16.7.95.

Rana, M S. Phasing out low-priced books. **The Pioneer** 18.7.95.

Sajjan, G B. Our school textbooks. **The Hindu** 25.7.95.

TONING UP the library system (Editorial). **The Hindu** 15.7.95.

STUDENTS & STUDENT ACTIVITIES

Asif Khan. Commonwealth awards for youth groups. **National Herald** 28.7.95.

FRESHER'S GUIDE to DU (Editorial). **The Hindustan Times** 12.7.95.

Iyer, Nandini and others 'Michael Jackson founded St Stephen's College'. **The Statesman** 21.7.95

Saikia, Dipanka. The trauma of ragging. **The Assam Tribune** 30.7.95.

WHERE HAVE the Tiananmen students gone? (Editorial). **National Herald** 28.7.95.

SPECIAL EDUCATION

Narayanaswamy, S. A lesson for parents and teachers : Coping with slow learners. **Deccan Herald** 2.7.95.

Sircar, Anjali. Reaching out to the learning disabled. **The Hindu** 9.7.95.

WOMEN'S STUDIES

Ahmed, Tabassum. Illiteracy amongst Muslim women. **National Herald** 21.7.95.

Behl, R K. The catchword is empowerment. **The Tribune** 31.7.95.

Jayanthi, C. Female students in focus. **The Pioneer** 12.7.95.

Sheikh, Kiran. It's a girl - again. **The Times of India** 15.7.95.

ADULT EDUCATION

Vinan, Sevanti. No royal road to learning. **The Hindu** 2.7.95.

ELEMENTARY & SECONDARY EDUCATION

Ahmed, Tabassum. The dismal neglect of primary education. **National Herald** 13.7.95.

Dutt, Sharda. Making room for child's growth. **The Tribune** 10.7.95.

Paul Mehta, Niti. Need for 'quality time' in schools. **The Hindustan Times** 11.7.95.

COMPARATIVE EDUCATION & AREA STUDIES

Andalib Akhter. Australia, a new haven for Indian students. **Deccan Chronicle** 24.7.95.

Kulkarni, Nita Jatar. Foreign institutes slash grants, self-funding encouraged : Admissions get more difficult. **The Telegraph** 31.7.95.

Mahender Reddy, J. Man who brought education to the door step. **Deccan Herald** 16.7.95.

Sharma, Manoranjan. Higher education in Assam : Problems and prospects. **The Assam Tribune** 9.7.95.

INSTITUTIONAL PROFILE

Gellner, Ernest. No school for scandal : London School of Economics. **The Hindu** 2.7.95.

Kar, Samit. A university with a difference : West Bengal University of Animal and Fisheries Sciences, Calcutta. **Patriot** 4.7.95.

Kaul, Malvika. Of udhar ka omelette & coffee gup-shup : University of Delhi. **The Hindustan Times** 12.7.95.

Krishna, Pranay. What is left of JNU culture? **The Hindustan Times** 12.7.95.

Madhusudhan, P. Workshops to mark IEI's platinum jubilee : Institution of Engineers (India). **Deccan Chronicle** 24.7.95.

Vedantam, Vatsala. Coventry : A university with a tradition. **Deccan Herald** 9.7.95.

Welsh, David. Informing informally : Techniquest, South Wales. **The Hindustan Times** 22.7.95.

BIOGRAPHICAL PROFILE

Shargava, G S. A born teacher : Prof G Ram Reddy. **Deccan Chronicle** 9.7.95.

Jain, Chakresh. A visionary and an educationist : Maharshi Dhondo Keshav Karve. **Free Press Journal** 9.7.95.

Sathyamurthy, T V. The self-created : Srinivasa Ramanujan. **The Statesman** 8.7.95.

CLASSIFIED ADVERTISEMENTS

SACRED HEART COLLEGE THEVARA, COCHIN-682 013

WANTED

Lecturers (both community and open quota) for the vacancies likely to arise in Sociology subjected to Government, University and UGC norms and regulations. Application forms can be obtained from the College Office on payment of Rs. 50/- (Rs. 60/- by post). Apply within 30 days of this notification to : The Manager, S H College, Thevara, Cochin - 682 013.

B.A.M. COLLEGE, THURUTHICAD P.O KERALA - PIN 689597.

WANTED (1) Lecturer in Zoology, Leave Vacancy -1, Community quota (2) Lecturer in Chemistry, Substantive Vacancy-1, Community quota, (3) Part-time Lecturer in Mathematics, Vacancy 1, Open merit. All vacancies are subject to the approval of University/Govt. Qualification and Age:- As prescribed by the University/Govt. Appointees in Chemistry and Mathematics will not have any claim for UGC vacancies in future. They will be paid only state pay scales. Apply within one month from the date of this notification. Application form can be had from the College office on payment of Rs. 100/- (By M.O Rs. 110/-).

PRINCIPAL

MADURAI KAMARAJ UNIVERSITY

Notification No. R 16/95

Applications in Eight copies in the prescribed form are invited from suitable candidates for the post of Controller of Examinations in Madurai Kamraj University, Palkalainagar, Madurai-625 021.

Last date for the issue and submission of filled-in applications is 11.9.1995.

Qualifications

Applicants should possess minimum qualifications as stated below with administrative experience, preferably with knowledge pertaining to University administration and conduct of examinations.

1) A Postgraduate degree with good academic record.

2) Reader/S.G. Lecturer with minimum 15 years of teaching experience.

OR

Comparable experience in research establishments and other institutions of higher education

OR

15 years of administrative experience of which 8 years as Deputy Registrar or an equivalent post.

The appointment will be on tenure basis for a period of 3 years in the first instance.

Scale of Pay

Rs. 4500-150-5700-200-7300 with usual allowances:

Prescribed application forms can be obtained in person or by post from the office of the Registrar, Madurai Kamraj University, Palkalainagar, Madurai-625 021, on requisition accompanied by a Demand Draft for Rs. 100/- drawn in favour

of the Registrar, Madurai Kamraj University, Madurai on any nationalised/scheduled bank payable at Madurai. Money orders/Postal orders/cheques/cash will not be accepted.

The filled-in applications may be sent in a sealed cover addressed to Thiru C. Chandrasekaran, Registrar-in-charge, Madurai Kamraj University, Palkalainagar, Madurai 625 021 by Registered Post.

Madurai-625 021

Date: 7.8.1995 C. Chandrasekaran
REGISTRAR-IN-CHARGE

ST. XAVIER'S COLLEGE FOR WOMEN ALUVA

WANTED WOMEN ONLY

Wanted lecturer (subject to the approval of university/Government) in Malayalam (M.Phil T.F.S. vacancy) under



Institute of Correspondence Courses, Barkatullah University, Bhopal

ADMISSION NOTICE

(Courses Approved by U.G.C., New Delhi)

APPLICATIONS on plain paper are invited for admission to the following Correspondence Courses of 1995-96 with a demand draft of Rs. 150/- drawn in favour of the Director, Correspondence Courses, Barkatullah University, Bhopal drawee State Bank of India, University Branch, Bhopal Code No. 3537 by 15th Sept. 95 and with a late fee of Rs. 100/- upto 30th Sept 95. Please send a self addressed envelope of 25x10 cm size affixing stamps of Rs. 15/- alongwith your application for sending prescribed form.

Course	Duration	Annual Fee	Eligibility
B.Ed.	One year	Rs. 5000/-	Graduation
M.Ed.	One year	Rs. 6000/-	B.Ed. with one year teaching experience in a recognised institute.
P.G. Diploma In Social Work	One year	Rs. 5000/-	Graduation with one year experience in Social Welfare Agency/Institute.

Note : Please carefully note that no any other Institute or Agency is authorised for these Courses.

community/open merit. Age and Qualification :- As applicable for direct recruitment of teachers in Government colleges as per UGC Rule. Application should reach the Manager, St. Xavier's College for Women, Aluva within one month from the date of publication of this notification. The prescribed application form can be had from the college office on payment of Rs. 100/-.

MANAGER

ST. PETER'S COLLEGE

KOLENCHERY-682311

WANTED

Lecturers in English & Malayalam
(Temporary Vacancy)

Lecturer in Hindi (Permanent Vacancy)

Under merit/community quota.

Appointments will be subject to the approval of Govt./University.

Age & Qualifications : As prescribed by the University and Government.

Appointees will not have any claim for UGC Scheme vacancies, will be paid only state salary, will have to teach in the pre-degree classes only and will have to go to the pre-degree category.

Apply within one month from the date of this notification (candidates who have already applied in response to our earlier notification need not apply again).

Application form can be had from the undersigned on payment of Rs. 100/- (By M.O. Rs. 107).

PRINCIPAL

G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY
PANTNAGAR-263 145, DISTT. NAINITAL

EMPLOYMENT NOTICE NO. 2/1995

Applications are invited for various posts of the University as listed in the following table.

Application forms can be obtained from the Office of the Chief Personnel Officer (Recruitment Section) of this University by sending a self addressed Rs. 4.00 stamped envelope (25 x 10 c.m. size) with the name of the post inscribed thereon. Allowances will be at the U.P. Govt. rates. Services of Government servants or from Established institutions are obtainable on deputation. Higher starting salary is admissible in deserving cases. Residential accommodation within the campus may be possible to certain extent depending upon the availability of the houses. Only pensionary benefits as per rules of the University will be admissible to selected candidates.

Complete application forms alongwith attested copies of relevant certificates, etc. and application fee of Rs. 15/- for the candidates belonging to Scheduled Castes and Scheduled Tribes and Rs. 40/- for the other candidates in the form of crossed postal order in favour of Comptroller, G.B. Pant University of Agriculture & Technology, Pantnagar (Post Office) or Cash receipt of the Comptroller's Office should be sent to the Chief Personnel Officer (Recruitment Section) G.B. Pant University of Agriculture & Technology, Pantnagar-263 145 (UP) by 31.8.1995 at the latest. **APPLICATIONS RECEIVED AFTER THE ABOVE PRESCRIBED DATE FROM ANY CANDIDATE EITHER LOCAL OR OUTSIDE WILL NOT ENTERTAINED.**

SEPARATE APPLICATION IS REQUIRED FOR EACH POST.

NOTE : The minimum eligibility qualifications of a candidate will be determined on the closing date of receipt of applications.

Sl. No.	Name of the post & Pay scale	Location	Details of vacancies & their reservation					Remarks
			SC	ST	OBC	General/ unreserved	Total	
1	2	3	4	5	6	7	8	9
1.	Director Experiment Station Rs. 4500-7300 plus allowances	Directorate of Research HQ	1	-	-	-	1	Leave/llen vacancy
2.	Director Extension Rs. 4500-7300 plus allowances	Directorate of Extension HQ	-	-	-	1	1	-do-
3.	Joint Director Hill Campus Rs. 4500-7300	Ranichauri Tehri Garhwal	-	-	1	-	1	
4.	Associate Professor T.V. Production Rs. 3700-5700	College of Agriculture	-	-	-	1	1	
5.	Training Associate/ Subject Matter Specialist/ Assistant Professor. Rs. 2200-4000	KVI(Lohaghat/ Shahjahanpur	-	-	1	1	2	
	(a) Horticulture	-do-	-	-	1	1	2	
	(b) Home Science	-do-	1	-	-	1	2	
	(c) Vety. Science							

(d) Extension Education/ Agricultural Extension	-do-	-	-	1	1	2
(e) Plant Protection	-do-	*1	-	-	1	2
6. Asstt. Prof. Soil Science Rs. 2200-4000	College of Agriculture	-	-	1	-	1
7. Training Associate/SMS/ Asstt. Prof. Agronomy Rs. 2200-4000	KVK(Lohaghat/ Shahjahanpur	-	-	1	1	2
8. Senior Editor Rs. 3000-4500	Directorate of Communication HQ	-	-	-	1	1
9. Senior Script Writer Rs. 2350-4300	-do-	1	-	-	-	1
10. Press Manager Rs. 2200-4000	University Press HQ	-	-	-	1	1
11. Business Manager Rs. 2200-4000	Directorate of Communication HQ	-	-	1	-	1
12. Editor Kisan Bharti Rs. 2200-4000	-do-	-	-	-	1	1
13. Editor Indian Farmer's Digest Rs. 2200-4000	-do-	-	-	1	-	1
14. Training Assistant Rs. 1740-3000						
(a) Home Science	KVK (Lohaghat/ Shahjahanpur	-	-	1	1	2
(b) Animal Husbandry	-do-	-	-	1	1	2
(c) Agronomy	-do-	1	-	-	1	2

QUALIFICATIONS:-

For post mentioned at Sl. No. 1

Essential : (1) A Doctorate degree in any branch of Agril. Science/Technology/Veterinary Science with consistently good academic record. (2) Ten years teaching of degree classes/research as evidenced by publications/professional experience in the above areas; (3) Ability to conduct and guide research and administrative experience.

Desirable: Post graduate teaching and research/administrative experience.

For post mentioned at Sl. No. 2

Essential: (1) Consistently good academic record with first class or high second class Master's degree in any branch of Agril. Sciences (2) Ten years experience of planning/execution/coordination of extension programme/activities in Agricultural University/Government. **Desirable:** (1) Ph.D. in any branch of Agriculture (2) Administrative experience in a responsible position.

For post mentioned at Sl. No. 3

Essential: (1) Doctorate degree in any branch of Agriculture Science including Veterinary/Animal Science OR M.Tech. Agricultural Engineering. (2) Ten years teaching/research/field experience. **Desirable:** Experience of initiating and guiding research and administrative experience.

For post mentioned at Sl. No. 4

Essential: Good second class Master's degree in Radio/Television/Agril. Communication with five years professional experience of TV/Video production in repu-

table organization out of which 3 years experience must be in the capacity of Assistant Professor/J.R.O./S.M.S./Training Associate. OR Good second class Master's degree with 7 years professional experience of TV/Video production in a reputable organization out of which 3 years experience must be in the capacity of Assistant Professor/J.R.O./S.M.S./ Training Associate.

For post mentioned at Sl. No. 5(a), (c), (d), (e) and Sl. No. 7

Essential: Ph.D. in concerned subject of Agriculture or M.Sc. in Agriculture in concerned subject with two years experience/ M.V.Sc. in the subject concerned.

For post mentioned at Sl. No. 5(b):

Essential: Consistently good academic record with high second class Bachelor's degree in Home Science and good second class Master's degree in Home Science in the subject concerned or in a related field. **Desirable:** (1) Two years teaching, research and Extension experience in the subject. (2) Ph.D. in the subject.

For post mentioned at Sl. No. 6

Essential: 1. Doctorate degree in the subject concerned. 2. Two years teaching/research/extension experience. Note: Ph.D. will be taken as 2 years experience for Assistant Professor only.

For post mentioned at Sl. No. 8

Essential: 1. Second Division Master's degree in Science, Agriculture or Arts. (2)

Seven years experience of Science writing, editing and language adaptation.

For post mentioned at Sl. No. 9

Essential: 1. Second Division Master's degree in Agriculture from any recognized University. Three years experience of writing for Radio programme or Newspapers/Magazines.

For post mentioned at Sl. No. 10

Essential: 1. Graduate in Arts or Science 2. Diploma in Printing and allied technology 3. Specialization in Letter Press Printing 4. Atleast 3 years experience of managing modern and sizeable Printing Press.

For post mentioned at Sl. No. 11

Essential: 1. Bachelor's degree in any subject from a recognized university. 2. Atleast five years experience of publication, sales and circulation of books, periodicals and magazines in Government, university or private publishing organization of repute

For post mentioned at Sl. No. 12 and 13

Essential: 1. Second Division Master's degree in Science, Agriculture or Arts. 2. Five years experience of Science writing, editing and language adaptation.

For post mentioned at Sl. No. 14(a)

Essential: Master's degree in Home Science.

For post mentioned at Sl. No. 14(b) and (c):

Essential: M.Sc. Ag. in the subject concerned.

CHIEF PERSONNEL OFFICER



DISTANCE EDUCATION

OSMANIA UNIVERSITY HYDERABAD-500 007

ADMISSION NOTIFICATION - 1995

Candidates from all over India are eligible for admission without age or area restriction provided they fulfil the requisite conditions of Eligibility for various courses as detailed below:

COURSES OFFERED UNDER FORMAL SYSTEM

Course	Eligibility
1. B.A./B.Com. 3 years (year-wise)	: Pass in Intermediate or 12th Class or an equivalent examination
2. M.Com	: Pass in B.Com. with 40% marks in aggregate in optional subjects of a recognised university.
3. M.A. (Economics/Political Science)	: Pass in B.A. with not less than 40% marks in Economics/Pol. Science of a recognised University.
4. M.A. (Hindi/English/Telugu) (Literature)	: Pass in B.A. with English/Hindi/Telugu as one of the optionals with not less than 40% marks or 50% marks in case of Part-I Language (100/200).
5. M.A. (Philosophy)	: Graduate of any faculty (except Engineering and Technology) with not less than 40% marks in the optional subjects.
6. M.A. (Public Personnel Management)	: Graduate of any faculty including Engineering & Technology with not less than 40% in the aggregate in the optional subjects.
7. M.Sc. (Mathematics)	: B.A./B.Sc./Engineering Graduate with not less than 40% marks in Mathematics or 50% marks in ancillary Mathematics or a pass in PG Diploma in Mathematics of this university.
8. One year PG Diploma in Mathematics	: Graduate of any faculty with not less than 40% marks in the aggregate in the optional subjects.

Note : SC, ST candidates with 36% marks are eligible for admission into all courses

Cost of prospectus and Admission forms (in person) : Rs. 35/-, by post : Rs. 40/- through a Bank Draft.

Last date for submission of Admission forms :

Course	without late fee	with late fee
B.A./B.Com	10th September	30th November
M.A./M.Com./M.Sc.	3rd October	31st December

COURSES OFFERED UNDER OPEN UNIVERSITY SYSTEM

(NON-FORMAL SYSTEM)

B.A./B.Com. : All Candidates residing anywhere in India who are not having formal educational qualifications and who shall have completed 18 years of age by 31-12-1995 are eligible for appearing the Eligibility Test to be conducted by the university on 22-10-1995. The candidates who pass in the Eligibility Test will be given admission in the 1st year of 3 year B.A./B.Com. degree course.

Cost of Prospectus and Application form for the Eligibility Test
(in person) Rs. 40/- (by post) Rs. 50/- through a bank draft.

Last date for submission of Application for the Eligibility Test : 25-9-1995

Date of Eligibility Test : 22-10-1995 (Sunday)
in Hyderabad/Secunderabad and selected centres in A.P.

Prospectus and application forms can be had in person from the Extension Counter of State Bank of Hyderabad situated at CDE, OU, or Andhra Bank, Vidyanaagar/Narsayanaguda/Himayathnagar; or Canara Bank, Mettuguda Branch, Secunderabad. Those desirous of obtaining the prospectus by post should obtain a bank draft for the amount shown above in favour of the Director, CDE, OU, payable at Hyderabad and send it along with a self addressed envelope (without stamps) of size 9" x 21" to the Director, Centre for Distance Education, OMANIA UNIVERSITY, HYDERABAD-500 007.

Application received through Tutorials or any other agency
will be summarily rejected as we do not have any agents.

Prof. R. Krishna Rao
DIRECTOR

INSTITUTE OF CORRESPONDENCE EDUCATION UNIVERSITY OF JAMMU

ADMISSION NOTICE

Invites Applications for admission to the following programmes for the academic year, 1995-96 :

Sl. No.	Name of the Course	Eligibility
1.	*B.Ed.	A Bachelor's degree in the faculty of Arts, Science, Social Sciences, Commerce, Agriculture, Music and Fine Arts.
2.	B.A. and B.Com (Three years)	10 + 2 or its equivalent qualification in relevant discipline.
3.	B.A. and B.Com Bridge Course	10 + 2 + 2 or its equivalent qualification in relevant discipline.
4.	M.Com	i) B.Com under 10 + 2 + 3 or its equivalent qualification or
		ii) B.A./B.Sc. with 1st Division only under 10 + 2 + 3 or its equivalent qualification or
		iii) B.A/B.Sc. under 10 + 2 + 3 and D.B.M. with 48% of the aggregate marks in D.B.M.
5.	LL.B (Academic)	Graduation in any discipline
6.	Post-graduate Diploma in Business Management (P.G.D.B.M.)	Graduation in any discipline
7.	Certificate Course in Urdu through Hindi Medium	Matriculation
8.	English Improvement Course	Matriculation

*The University Grants Commission has given consent to Jammu University to run B.Ed. Course (through correspondence for the year 1995-96 only)

GENERAL INFORMATION

1. A Candidate is allowed to take admission in only one programme at a time except for Sr No. 7&8.
2. Medium of instruction is English except for Sr. No. 7.
3. **For Application form and Prospectus**

Write to the Director, Institute of Correspondence Education, University of Jammu, Jammu-180004, against the payment of Rs.100/- for B.Ed. and Rs. 20/- for other courses either in cash (at counter) or by way of Crossed Demand Draft in favour of the Director, Institute of Correspondence Education, University of Jammu payable at Jammu. Candidates, who wish to obtain application form-cum-prospectus through post should send a self addressed envelope of the size 18x24 cms bearing postage stamps of Rs. 14/- alongwith the crossed demand draft. Postal requests for forms will be entertained upto **August 25, 1995** only. Cheques, Indian Postal orders and outstation drafts are not accepted.

Application-form-cum-prospectus can also be had in person from the **Institute of Correspondence Education** upto **August 28, 1995** against **Crossed Bank Draft** or with cash on the counter.

4. Last Date

Application form complete in all respects alongwith required fee as mentioned in the prospectus should reach the Institute on or before **September 2, 1995**. Incomplete forms will be summarily rejected.

5. For last date with late fee contact Director, I.C.E., University of Jammu.

6. Admission will be open to persons all over India.

No. : ICE/Pub/95-96
Dated : 12.7.95

Dr. Santokh Ram
DIRECTOR